

**MACT Compliance Handbook**  
**for the**  
**Reciprocating Internal Combustion Engines NESHAP**

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**Disclaimer**

This report is not a legally binding document, and is not meant to replace the published regulation titled "National Emission Standards for Hazardous Air Pollutants (NESHAP): Reciprocating Internal Combustion Engines (*Federal Register*, June 15, 2004, beginning on page 33474). This document presents specific aspects of the regulation and may not cover all parts of the regulation. This document is an elaboration of the appropriate legal document, and the final authority rests solely in the legal document.

## **1.0 Introduction and How to Use this Handbook**

Section 112 of the Clean Air Act (CAA) requires the U. S. Environmental Protection Agency (EPA) to list categories of major and area sources of Hazardous Air Pollutants (HAP) and to establish National Emission Standards for Hazardous Air Pollutants (NESHAP) for the listed source categories. The final stationary reciprocating internal combustion engine (RICE) NESHAP was published on June 15, 2004 (69 FR 33474). The rule regulates HAP emissions from specific RICE that are located at major sources of HAP. The final rule establishes emission limitations based on maximum achievable control technology (MACT), and is commonly called the “RICE MACT.”

The purpose of this document is to educate sources, EPA Regional Office staff and State/local air pollution control agency personnel on the requirements of the final RICE NESHAP. This document is divided into five sections, including this section. Section 2 provides a step-by-step procedure for you to determine if your engine or engines are subject to MACT requirements. Section 3 provides a summary of when you will have to meet these MACT requirements. Sections 4 through 9 present a summary of the specific MACT requirements for each engine subcategory. Key definitions are provided in Appendix A.

### **1.1 How Should I Use this Handbook?**

This Handbook will provide assistance to help you determine whether your engine is subject to MACT requirements. Use the tools provided in Section 2.0 of this Handbook, along with the final RICE MACT, to evaluate MACT requirements for each engine at your facility.

If your engines are subject to MACT requirements, use the remaining sections of this Handbook to become familiar with the MACT requirements for your engines' subcategories.

Regulatory references are provided throughout the Handbook to direct the user to the original regulatory text for each requirement. These references are provided in brackets (e.g., [§63.2] to reference 40 CFR §63.2).

### **1.2 How Do I Get Copies of the Final Rule or Updates?**

You can find a copy of the rule in Title 40 of the Code of Federal Regulations (CFR) part 63, subpart ZZZZ, or in the June 15, 2004 *Federal Register*, beginning on page 33474. You may also obtain rule updates on the Internet via EPA's Air Toxics Website at the following address: <http://www.epa.gov/ttn/atw/rice/ricepg.html>.



## 2.0 Are My Engines Subject to MACT?

The purpose of this section is to help you determine whether you have engines at your facility that are subject to the RICE MACT (40 CFR part 63, subpart ZZZZ). Figure 1 is an applicability flow diagram that provides a brief overview of the determination process. The following is a detailed step-by-step process that provides guidance for making this determination.

As you proceed through each applicability determination step below, you will be instructed to enter your results for each engine in Table 1, which will provide documentation of this process for your records.

Note that if you have RICE at your facility, you should keep a record of your applicability determination for 5 years, even if you are NOT subject to any other requirements under the IC Engine MACT. [§§63.1(b)(3) and 63.10(b)(3)]

### **Step 1: Do you have “stationary” RICE at your facility?**

The first step in the applicability determination process is to determine whether or not you have one or more “stationary” RICE at your facility. If you do not, your facility is not subject to the RICE MACT and you do not need to continue with this handbook.

A stationary RICE is any internal combustion engine that (1) uses reciprocating motion to convert heat energy into mechanical work and (2) is not mobile [§63.6585(a)]. Nonroad engines are considered to be mobile engines and therefore are not considered stationary RICE. Specifically, your engine is NOT considered a stationary RICE if:

- it is used to drive motor vehicles or vehicles used only for competition; or
- it is in or on a piece of equipment that is self-propelled or can be self-propelled as well as performing another function (for example, garden tractors, off-highway mobile cranes and bulldozers) [§1068.30]; or
- it is in or on a piece of equipment that is intended to be propelled while performing its function (for example lawnmowers and string trimmers) [§1068.30]; or
- it changes location within one year (or shorter period of time if the engine is at a seasonal source) [§1068.30].<sup>1</sup>

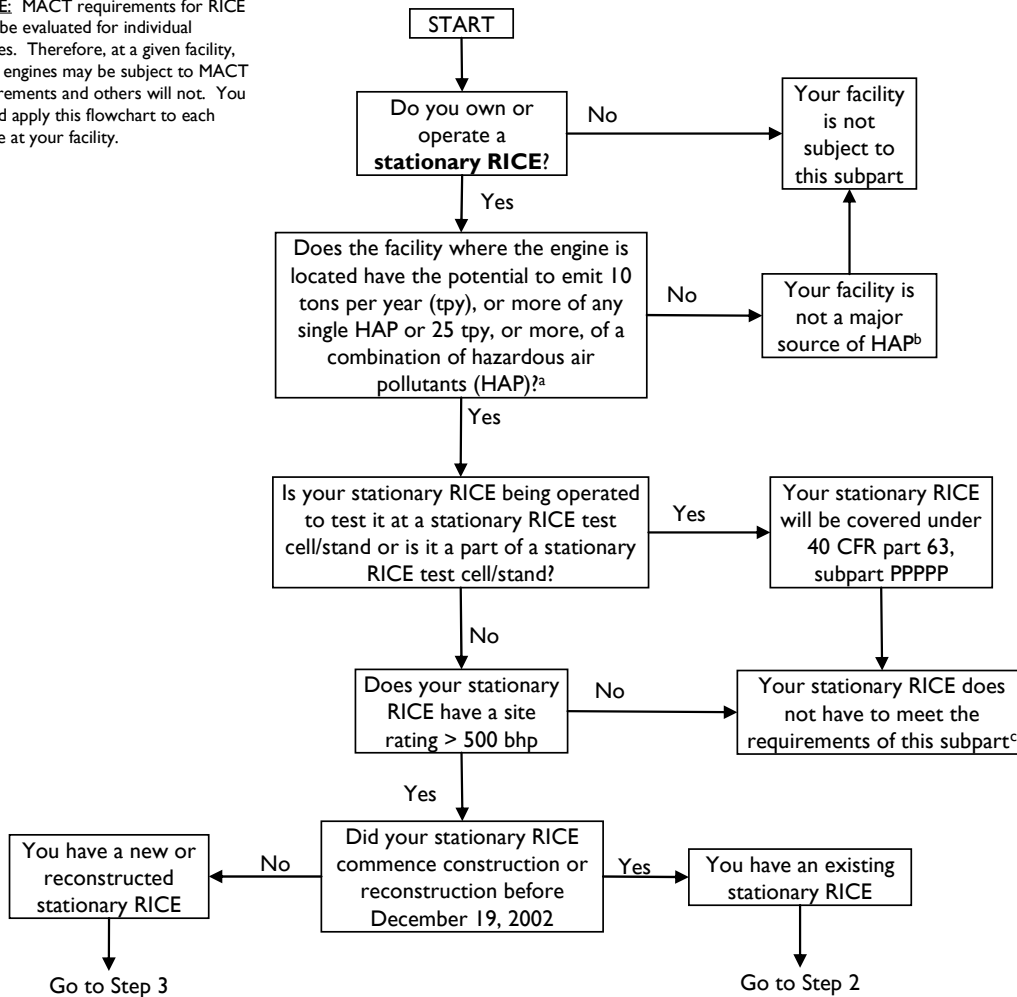
Stationary RICE are typically used for compressor and pump drives, electricity generation, and other industrial processes. Stationary RICE may be fueled by gasoline, diesel fuel, natural gas, landfill gas, digester gas, and other types of fuels.

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<sup>1</sup> A “seasonal source” is a stationary source that stays in a single location for at least two years and operates for three months or more each year. An engine located at a seasonal source remains at a seasonal source during the full annual operating period. (For example, if the seasonal source operates for three months per year, the engine must remain at the seasonal source for at least three months.)

**Figure I**  
**Applicability Flowchart for National Emission Standards for Hazardous Air Pollutants (NESHAP) for Reciprocating Internal Combustion Engines (RICE) 40 CFR part 63, subpart ZZZZ**

**NOTE:** MACT requirements for RICE must be evaluated for individual engines. Therefore, at a given facility, some engines may be subject to MACT requirements and others will not. You should apply this flowchart to each engine at your facility.



<sup>a</sup> Special non-aggregation provisions apply to oil and natural gas production and natural gas transmission and storage facilities – refer to the definitions for “Major source” and “potential to emit” in subpart ZZZZ.

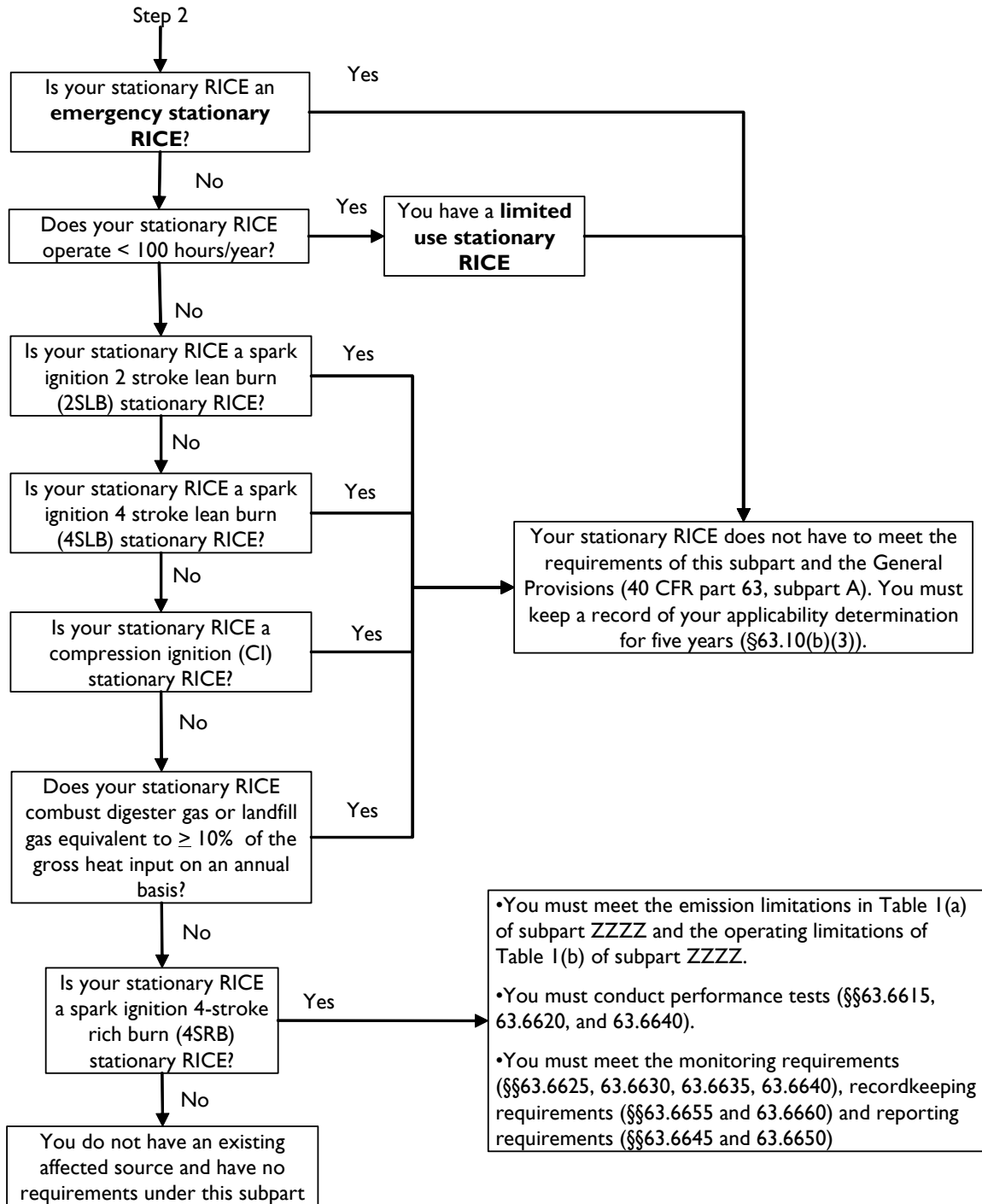
<sup>b</sup> If your area source increases emissions it may become a major source, and those facilities will become subject. EPA will conduct a future rulemaking for engines located at area sources– proposal expected 10/31/06 and promulgation expected 12/20/07.

<sup>c</sup> Engines less than or equal to 500 bhp and located at major-source facilities will be addressed by EPA in a future rulemaking – proposal expected 10/31/06 and promulgation expected 12/20/07.

July 31, 2004

## Figure I NESHAP for Existing Stationary RICE

NOTE: This page only refers to requirements for **existing** stationary RICE. If your stationary RICE is **new or reconstructed**, refer to step 3 of this flowchart.

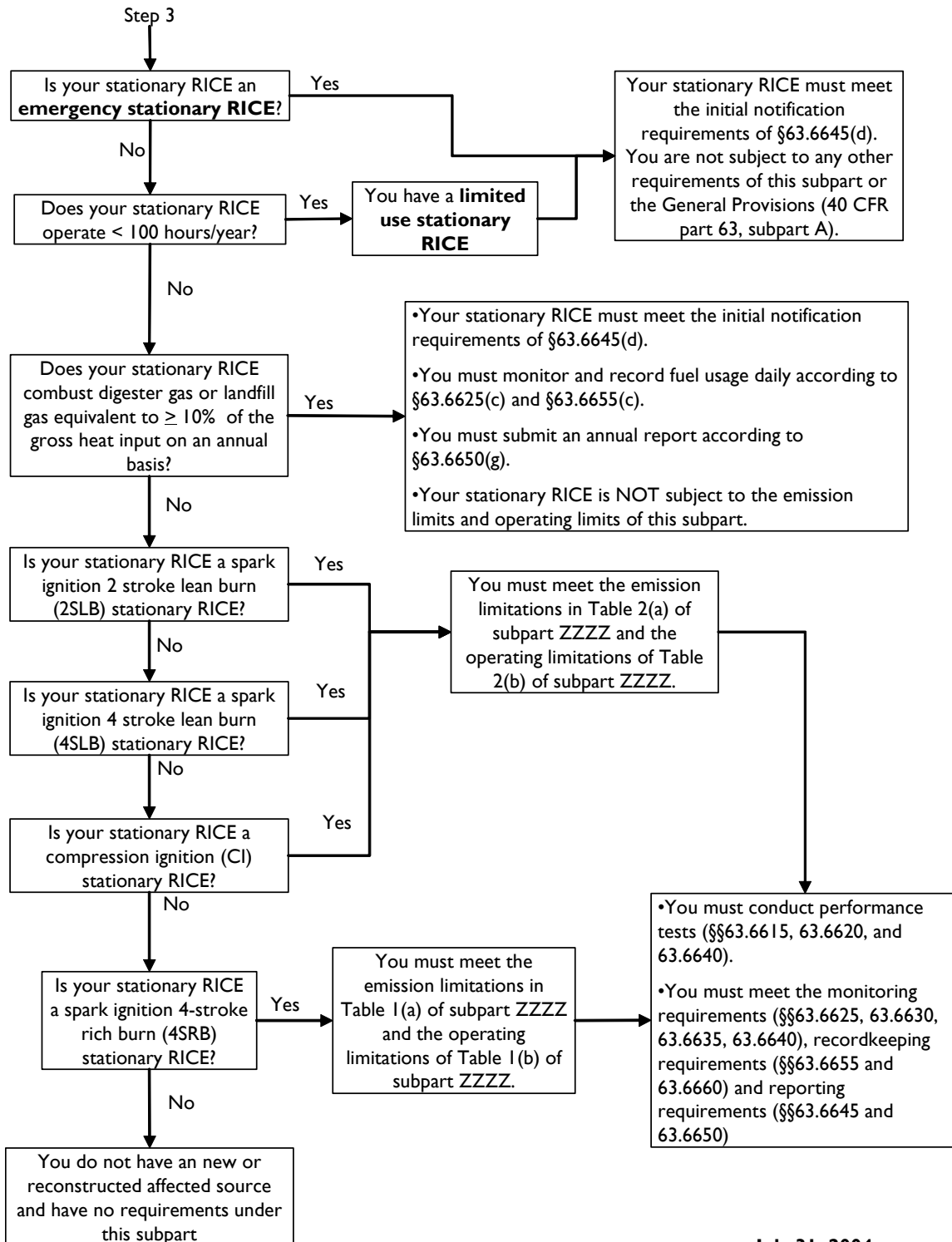


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## Figure I

### NESHAP for New or Reconstructed Stationary RICE

NOTE: This page only refers to requirements for **new or reconstructed** stationary RICE. If your stationary RICE is **existing**, refer to step 2 of this flowchart.



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## Figure I

### KEY DEFINITIONS:

Commenced means, with respect to construction or reconstruction of an affected source, that an owner or operator has undertaken a continuous program of construction or reconstruction or that an owner or operator has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of construction or reconstruction (§63.2).

Compression ignition engine means any stationary RICE in which a high boiling point liquid fuel injected into the combustion chamber ignites when the air charge has been compressed to a temperature sufficiently high for auto ignition, including diesel engines, dual-fuel engines, and engines that are not spark ignition (§63.6675).

Construction means the on-site fabrication, erection, or installation of an affected source. Construction does not include the removal of all equipment comprising an affected source from an existing location and reinstallation of such equipment at a new location. The owner or operator of an existing affected source that is relocated may elect not to reinstall minor ancillary equipment including, but not limited to, piping, ductwork, and valves. However, removal and reinstallation of an affected source will be construed as reconstruction if it satisfies the criteria for reconstruction as defined in this section. The costs of replacing minor ancillary equipment must be considered in determining whether the existing affected source is reconstructed (§63.2).

Emergency stationary RICE means any stationary RICE that operates in an emergency situation. Examples include stationary RICE used to produce power for critical networks or equipment (including power supplied to portions of a facility) when electric power from the local utility is interrupted, or stationary RICE used to pump water in the case of fire or flood, etc. Emergency stationary RICE may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by the manufacturer, the vendor, or the insurance company associated with the engine. Required testing of such units should be minimized, but there is no time limit on the use of emergency stationary RICE in emergency situations and for routine testing and maintenance. Emergency stationary RICE may also operate an additional 50 hours per year in nonemergency situations (§63.6675).

Lean burn engine means any two-stroke or four-stroke spark ignited engine that does not meet the definition of a rich burn engine (§63.6675).

Reconstruction, unless otherwise defined in a relevant standard, means the replacement of components of an affected or a previously nonaffected source to such an extent that:

- (1) The fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable new source; and
- (2) It is technologically and economically feasible for the reconstructed source to meet the relevant standard(s) established by the Administrator (or a State) pursuant to section 112 of the Act. Upon reconstruction, an affected source, or a stationary source that becomes an affected source, is subject to relevant standards for new sources, including compliance dates, irrespective of any change in emissions of hazardous air pollutants from that source (§63.2).

Rich burn engine means any four-stroke spark ignited engine where the manufacturer's recommended operating air/fuel ratio divided by the stoichiometric air/fuel ratio at full load conditions is less than or equal to 1.1. Engines originally manufactured as rich burn engines, but modified prior to December 19, 2002 with passive emission control technology for NO<sub>x</sub> (such as pre-combustion chambers) will be considered lean burn engines. Also, existing engines where there are no manufacturer's recommendations regarding air/fuel ratio will be considered a rich burn engine if the excess oxygen content of the exhaust at full load conditions is less than or equal to 2 percent (§63.6675).

Spark ignition engine means a type of engine in which a compressed air/fuel mixture is ignited by a timed electric spark generated by a spark plug (§63.6675).

Stationary reciprocating internal combustion engine (RICE) means any reciprocating internal combustion engine which uses reciprocating motion to convert heat energy into mechanical work and which is not mobile. Stationary RICE differ from mobile RICE in that a stationary RICE is not a non-road engine as defined at 40 CFR 1068.30, and is not used to propel a motor vehicle or a vehicle used solely for competition (§63.6675).



**Table 1. MACT Applicability Determination**

Engine ID	Engine Description		Site-Rated Horsepower (hp) <sup>a</sup>	Existing/New/Reconstructed (Select one) <sup>b</sup>	Subcategory <sup>c</sup>
	Manufacturer	Model			
				Existing___ New___ Reconstructed___	
				Existing___ New___ Reconstructed___	
				Existing___ New___ Reconstructed___	
				Existing___ New___ Reconstructed___	
				Existing___ New___ Reconstructed___	
				Existing___ New___ Reconstructed___	
				Existing___ New___ Reconstructed___	
				Existing___ New___ Reconstructed___	

<sup>a</sup> Only include engines with site-rated horsepower greater than 500, as instructed in step 3.

<sup>b</sup> Refer to the definition for existing, new, and reconstructed included step 4.

<sup>c</sup> Use the subcategories included in step 5.



Finally, uninstalled stationary RICE that are being tested at a stationary RICE test cell/stand are not subject to the RICE MACT [§63.6585]. A stationary RICE is considered “uninstalled” if it is not installed in or an integrated part of the final product (an example of a final product is a power generator) [§63.9285(b)].

## **Step 2: Is your facility a major source for hazardous air pollutants under the RICE MACT?**

The second step is to determine whether or not your facility is a major source for HAP under the RICE MACT. If you are not a major source, you are considered an area source and the RICE MACT does not apply to you. If you determine that you are not subject to the RICE MACT because your facility is not a major source for HAP emissions, you are still required to keep records of that determination for 5 years. [§§63.10(b)(3) and 63.10(b)(3)]

You are a major source if your plant site emits or has the potential to emit 10 tons per year (tpy) of one HAP or 25 tpy of any combination of HAP [§63.6585(b)]. Most RICE or groups of RICE are not major HAP emissions sources by themselves but are located at major HAP sites. Note that a facility is considered “major” for HAP emissions, regardless of the contribution from the RICE alone.

When calculating the potential to emit, include all HAP emission sources located within the contiguous area and under common control, not just RICE. However, the RICE MACT has special considerations for determining major source status of oil and gas production and natural gas transmission and storage facilities [§63.6585(b)].

1. Do not add together emissions from any oil or gas exploration or production well (with its associated equipment<sup>2</sup>) and emissions from any pipeline compressor station or pump station with emissions from other similar units, even when emission points are in a contiguous area or under common control.
2. For oil and gas production facilities, do not add together emissions from processes, operations, or equipment that are not part of the same oil and gas production facility.<sup>3</sup>

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<sup>2</sup> “Associated equipment” is equipment associated with an oil or natural gas exploration or production well, and includes all equipment from the well bore to the point of custody transfer, except glycol dehydration units, storage vessels with potential for flash emissions, combustion turbines, and stationary RICE.

<sup>3</sup> “Oil and gas production facility” means any grouping of equipment where hydrocarbon liquids are processed, upgraded (i.e., remove impurities or other constituents to meet contract specifications), or stored prior to the point of custody transfer; or where natural gas is processed, upgraded, or stored prior to entering the natural gas transmission and storage source category. For purposes of a major source determination, “facility” (including a building, structure, or installation) means oil and natural gas production and processing equipment that is located within the boundaries of an individual surface site as defined in this section. Equipment that is part of a facility will typically be located within close proximity to other equipment located at the same facility. Pieces of production equipment or groupings of equipment located on different oil and gas leases, mineral fee tracts, lease tracts, subsurface or surface unit areas, surface fee tracts, surface lease tracts, or separate surface sites, whether or not connected by a road, waterway, power line or pipeline, shall not be considered part of the same facility. Examples of facilities in the oil and natural gas production source category include, but are not limited to, well sites, satellite tank

3. For production field facilities<sup>4</sup>, only HAP emissions from glycol dehydration units, storage vessel with the potential for flash emissions, combustion turbines and reciprocating internal combustion engines need to be added together.
4. Do not add together emissions from processes, operations, and equipment that are not part of the same natural gas transmission and storage facility.<sup>5</sup>

To determine the potential to emit, follow these steps:

1. Identify all sources of emissions considering the oil and natural gas provisions listed above, if applicable.
2. Identify all HAP that your plant site emits.
  - a. To determine what HAP is emitted from your engines, there are several sources of information you may use, including test data, AP-42,<sup>6</sup> data published by the Gas Technology Institute,<sup>7</sup> or engineering calculations.
  - b. For other emissions sources, you may also use test data, AP-42, engineering calculations, or other published information. EPA has a website devoted to methods for identifying and estimating emissions: <http://www.epa.gov/ttn/chief/>.
3. Select a method to use to determine your HAP emissions. (See Table 2)
4. For each HAP, determine the maximum amount that each production process or piece of equipment in your plant site can emit in one year.
  - a. The simplest way to estimate maximum emissions is to assume that your RICE (or other process) operates 24 hours per day, 7 days per week, 365 days per year without control.
  - b. However, your RICE may have certain limitations that may affect its emissions, such as restrictions on the hours of operation, the presence of a control device, or the type of fuel used. If these restrictions are federally

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batteries, central tank batteries, a compressor station that transports natural gas to a natural gas processing plant, and natural gas processing plants.

<sup>4</sup> "Production field facility" means those oil and gas production facilities located prior to the point of custody transfer.

<sup>5</sup> "Natural gas transmission and storage facility" means any grouping of equipment where natural gas is processed, compressed, or stored prior to entering a pipeline to a local distribution company or (if there is no local distribution company) to a final end user. Examples of a facility for this source category are: an underground natural gas storage operation; or a natural gas compressor station that receives natural gas via pipeline, from an underground natural gas storage operation, or from a natural gas processing plant. The emission points associated with these phases include, but are not limited to, process vents. Processes that may have vents include, but are not limited to, dehydration and compressor station engines. For the purpose of a major source determination, facility means natural gas transmission and storage equipment that is located inside the boundaries of an individual surface site and is connected by ancillary equipment, such as gas flow lines or power lines. Equipment that is part of a facility will typically be located within close proximity to other equipment located at the same facility. Natural gas transmission and storage equipment or groupings of equipment located on different gas leases, mineral fee tracts, lease tracts, subsurface unit areas, surface fee tracts, or surface lease tracts shall not be considered part of the same facility.

<sup>6</sup> AP-42, Fifth Edition, Volume 1. Chapter 3: Stationary Internal Combustion Sources. Located on the Internet at the following address: <http://www.epa.gov/ttn/chief/ap42/ch03/>

<sup>7</sup> Reports containing emissions from RICE can be downloaded from the Gas Technology Institute by visiting the following website: <http://www.gastechnology.org/webroot/app/xn/xd.aspx?it=enweb&xd=4ReportsPubs\ReportsPub.xml>

enforceable,<sup>8</sup> you may include the effect that these restrictions have on emissions in your potential-to-emit calculations.

- c. The final rule has a special procedure for calculating potential-to-emit from oil and natural gas production facilities [§63.6675]. Potential-to-emit is typically calculated using the maximum natural gas or hydrocarbon liquid throughput for an oil and natural gas production facility. You may choose from one of the following methods to determine your maximum natural gas or hydrocarbon liquid throughput if you are an oil and natural gas production facility [§63.760(a)]:
  - i. If you can show a decline in annual natural gas or hydrocarbon liquid throughput (whichever is appropriate) for the five years prior to June 17, 1999, your maximum annual natural gas or hydrocarbon liquid throughput is the average annual natural gas or hydrocarbon liquid throughput for the three years prior to June 17, 1999 times 1.2.<sup>9</sup>
  - ii. If you cannot show a decline in annual natural gas or hydrocarbon liquid throughput (whichever is appropriate) for the five years prior to June 17, 1999, your maximum annual natural gas or hydrocarbon liquid throughput is the highest annual natural gas or hydrocarbon liquid throughput over the five years prior to June 17, 1999 times 1.2.<sup>10</sup>
  - iii. You may use your facility's design maximum natural gas or hydrocarbon liquid throughput to estimate potential-to-emit for your facility.
  - iv. You must determine the maximum values for other parameters used to estimate potential-to-emit as the maximum for the same period of time you determined your maximum natural gas or hydrocarbon liquid throughput above. You must base these parameters on an annual average or the highest single measured value.
- d. The final rule also has a special procedure for calculating potential-to-emit from natural gas transmission and storage facilities [§63.6675]. Potential-to-emit is typically calculated using the maximum natural gas throughput for a natural gas transmission and storage facility. You may choose from one of the following methods to determine your maximum natural gas

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<sup>8</sup> The following are considered federally enforceable limits and/or operating conditions: limits set as a part of a MACT standard; limits set as a part of an NSPS; title V permit limits; limits set as part of an approved State Implementation Plan (SIP) or Federal Implementation Plan (FIP); limits set as part of a construction permit under 40 CFR part 51; certain operating permits; limits set under a State rule that has been approved by EPA to implement and enforce MACT; and consent agreements.

<sup>9</sup> If the annual natural gas or hydrocarbon liquid throughput increases above the maximum throughput calculated under this option, you must recalculate your maximum throughput using the higher throughput times 1.2.

<sup>10</sup> If the annual natural gas or hydrocarbon liquid throughput increases above the maximum throughput calculated under this option, you must recalculate your maximum throughput using the higher throughput times 1.2.

throughput if you are a natural gas transmission and storage facility [§63.1270(a)(1) and (2)]:

- i. If your facility stores natural gas, you may choose to calculate maximum annual natural gas throughput using the following equation:<sup>11</sup>

$$\text{Throughput} = \frac{8,760}{\left( \frac{1}{IR_{\max}} + \frac{1}{WR_{\max}} \right)}$$

Where:

- Throughput = Maximum annual facilitywide natural gas throughput in cubic meters per year.
- $IR_{\max}$  = Maximum facility injection rate in cubic meters per hour.
- $WR_{\max}$  = Maximum facility withdrawal rate in cubic meters per hour.
- 8,760 = Maximum hours of operation per year.

- ii. If your facility only transports natural gas, you may calculate maximum annual natural gas throughput as the highest annual natural gas throughput over the five years prior to June 17, 1999 times 1.2.<sup>12</sup>
  - iii. You may use your facility's design maximum natural gas throughput to estimate potential-to-emit for your facility.
  - iv. You must determine the maximum values for other parameters used to estimate potential-to-emit as the maximum for the same period of time you determined your maximum natural gas throughput above. You must base these parameters on an annual average or the highest single measured value.
5. Add the maximum emissions from all production processes and equipment, except:
- a. Do not add together emissions from any oil or gas exploration or production well (with its associated equipment) and emissions from any pipeline compressor station or pump station with emissions from other similar units, even when emission points are in a contiguous area or under common control.
  - b. For oil and gas production facilities, do not add together emissions from processes, operations, or equipment that are not part of the same oil and gas production facility.
  - c. For production field facilities, only HAP emissions from glycol dehydration units, storage vessel with the potential for flash emissions,

<sup>11</sup> If the annual natural gas throughput increases above the maximum throughput calculated under this option, you must recalculate your maximum throughput using the higher throughput times 1.2.

<sup>12</sup> If the annual natural gas throughput increases above the maximum throughput calculated under this option, you must recalculate your maximum throughput using the higher throughput times 1.2.

combustion turbines and reciprocating internal combustion engines need to be added together.

- d. Do not add together emissions from processes, operations, and equipment that are not part of the same natural gas transmission and storage facility.

**Table 2. Methods to determine your HAP emissions**

<b>Method</b>	<b>Instructions</b>
Test Data	Conduct onsite measurements of HAP emissions.
Material-balance calculations	Estimate HAP emissions by comparing types and quantities of inputs to types and quantities of outputs.
Source specific models	Formulas for HAP emissions using source-specific parameters such as types and quantities of inputs, operating hours, and physical characteristics of equipment.
Emission factors	Use average HAP emission rates (provided by EPA, other agencies, or equipment vendors), multiplied by time or frequency of operation, to obtain emissions. HAP emission factors specific to your facility can be used.

**Step 3: Is the site-rated horsepower of your stationary engines greater than 500?**

Now that you have determined that you have stationary engines and are a major source of HAP, you must determine which of your stationary RICE have a site-rated horsepower greater than 500. If you only have stationary RICE with a site-rated horsepower less than or equal to 500 you are not subject to the RICE MACT [§63.6590(a)]. EPA will conduct a future rulemaking for these engines, with proposal expected October 31, 2006 and promulgation expected December 20, 2007.

Your site-rated horsepower is the maximum manufacturer's design capacity of your stationary RICE at engine site conditions [§63.6675]. For each stationary RICE that has a site-rated horsepower greater than 500, enter your facility-specific engine ID, manufacturer's name, model number, and the actual site-rated horsepower in Table 1 of this section.

**Step 4: Are your engines considered "new," "reconstructed," or "existing" under MACT?**

Once you have identified all of your stationary RICE with site-rated horsepower greater than 500 at your major source, you must determine whether your RICE are considered new, reconstructed, or existing under MACT.

The distinction between new and existing stationary RICE depends upon the date that you commenced construction of your engine. Construction of an engine is considered to have *commenced* when you have undertaken a continuous program of construction (or

reconstruction) [§63.2]. This includes entering into contractual obligations to undertake and complete a continuous program of construction (or reconstruction).

If construction commenced before December 19, 2002, the engine is EXISTING.

If construction commenced on or after December, 19, 2002, the engine is NEW.

Your engine is considered reconstructed if you have replaced components such that the fixed capital cost of the new components is more than 50 percent of the cost of a comparable new engine and it is technologically and economically feasible for the reconstructed engine to meet the MACT standard [§63.2]. The MACT requirements are the same for new and reconstructed stationary RICE. If you commenced reconstruction on or after December 19, 2002, the engine is RECONSTRUCTED.

### **Step 5: Under which MACT subcategory does each engine fall?**

Now that you have identified which stationary RICE with site-rated horsepower greater than 500 at your major source are new/reconstructed or existing, you must determine the subcategory for each engine. The RICE MACT has different requirements for each subcategory of stationary RICE. Determine which of the following subcategories applies for each RICE that has a site-rated horsepower greater than 500 entered in Table 1:

1. Emergency stationary RICE
2. Limited use stationary RICE
3. Stationary RICE that combust landfill gas or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis.
4. Compression ignition (CI)
5. Spark ignition 4-stroke rich burn (4SRB);
6. Spark ignition 2-stroke lean burn (2SLB); and
7. Spark ignition 4-stroke lean burn (4SLB).

Refer to the following paragraphs to determine the applicable subcategory for each of engines listed in Table 1. Your engine should be under ONE of these subcategories. For example, if you have a 4SRB engine that qualifies as an “emergency stationary RICE,” the engine is ONLY under the “emergency” subcategory for the purpose of MACT requirements.

### **Step 5a. Do you have a stationary RICE with a site-rating of 500 brake horsepower or less?**

Under Step 3, you identified the engines that are part of this subcategory. These engines are not subject to requirements under the RICE MACT and none of these engines were entered into Table 1. However, EPA will conduct a future rulemaking for these engines, with proposal expected October 31, 2006 and promulgation expected December 20, 2007. You are still required to keep a record of the MACT applicability determination for these engines for 5 years. [§§63.1(b)(3) and 63.10(b)(3)]

**Step 5b. Do you have an emergency stationary RICE?**

Emergency situations include the production of power for critical networks or equipment when electric power from the local utility is interrupted, as well as pumping water in the case of fire or flood [§63.6675]. Stationary RICE that operate in an emergency situation are considered emergency stationary RICE, provided the following criteria are met:

- emergency stationary RICE may be operated to perform maintenance checks and readiness testing, provided these tests are recommended by the manufacturer, vendor or insurance company associated with the engine.
- there is no limit on the use of an emergency stationary RICE in emergency situations and for routine testing and maintenance, but testing should be minimized.
- emergency stationary RICE may be operated in non-emergency situations no more than 50 hours per year.

Complete the subcategory column of Table 1 for each engine that meets the criteria of an emergency stationary RICE.

**Step 5c. Do you have a limited use stationary RICE?**

Any stationary RICE that operates less than 100 hours per year is considered a limited use stationary RICE [§63.6675].

Complete the subcategory column of Table 1 for each engine that meets the criteria of a limited use stationary RICE.

**Step 5d. Do you have a stationary RICE that combust landfill gas or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis?**

This subcategory is applicable to any of your engines that use landfill gas or digester gas as fuel equivalent to 10 percent or more of the annual gross heat input. Landfill gas is the gaseous by-product of the land application of municipal refuse typically formed through the anaerobic decomposition of waste materials and is composed primarily of methane and CO<sub>2</sub>. Digester gas is the gaseous by-product of wastewater treatment typically formed through the anaerobic decomposition of organic waste materials and is composed primarily of methane and CO<sub>2</sub>. [§63.6675]

To calculate the gross heat input, you must use the flow rate and heating values of each fuel for the year. The following are heating values of typical fuels used by stationary RICE.<sup>13</sup>

Fuel	Heating Values
Natural Gas	1,050 Btu/scf
Diesel Fuel	19,300 Btu/lb
Gasoline	20,300 Btu/lb

Complete the subcategory column of Table 1 for each engine that meets the criteria of a stationary RICE that combusts landfill gas or digester gas equivalent to 10 percent of the gross heat input on an annual basis.

### **Step 5e. Do you have a spark ignition stationary RICE?**

You have a **spark ignition** engine if the compressed air/fuel mixture of your engine is ignited by a timed electric spark generated by a spark plug [§63.6675]. If you have a spark ignition stationary RICE, you must determine whether you have a 4-stroke rich burn (4SRB) engine, a 2-stroke lean burn (2SLB) engine, or a 4-stroke lean burn (4SLB) engine (Steps 5e.i through iii).

#### **Step 5e.i. Do you have a spark ignition 4SRB stationary RICE?**

To determine whether you have a spark ignition 4SRB stationary RICE, you first must determine whether you have a four-stroke engine. You have a spark ignition four-stroke stationary RICE if you have a spark ignition engine which completes the power cycle in two crankshaft revolutions, with intake and compression strokes in the first revolution and power and exhaust strokes in the second revolution [§63.6675].

Next, you must determine whether you have a rich burn engine. You have a rich burn stationary RICE if you have a 4-stroke engine where the manufacturer's recommended operating air/fuel ratio divided by the stoichiometric air/fuel ratio at full load conditions is less than or equal to 1.1. If you have an engine that was originally manufactured as a rich burn engine, but was modified before December 19, 2002 with passive emission control technology for nitrogen oxides (NO<sub>x</sub>) (such as pre-combustion chambers) your engine is considered a lean burn engine (proceed to step 5e.ii or iii). Also, if you have existing engines (engines where construction was commenced before December 19, 2002) where there are no manufacturer's recommendations for air/fuel ratio, your engines are considered rich burn engines if the excess oxygen content of the exhaust at full load conditions is less than or equal to 2 percent [§63.6675].

<sup>13</sup> AP-42, Fifth Edition, Volume 1. Chapter 3: Stationary Internal Combustion Sources. Located on the Internet at the following address: <http://www.epa.gov/ttn/chief/ap42/ch03/>

Complete the subcategory column of Table 1 for each engine that is a 4SRB engine.

**Step 5e.ii. Do you have a spark ignition 2SLB stationary RICE?**

All spark ignition 2-stroke engines are considered 2SLB under the IC Engine MACT. A 2-stroke engine is an engine that completes the power cycle in a single crankshaft revolution [§63.6675].

Complete the subcategory column of Table 1 for each engine that is a 2SLB engine.

**Step 5e.iii. Do you have a spark ignition 4SLB stationary RICE?**

You have a 4SLB stationary RICE if your stationary RICE is not a rich burn engine and your engine completes the power cycle in two crankshaft revolutions, with intake and compression strokes in the first revolution and power and exhaust strokes in the second revolution [§63.6675].

Complete the subcategory column of Table 1 for each engine that is a 4SLB engine.

**Step 5f. Do you have compression ignition stationary RICE?**

You have a **compression ignition** (CI) engine if a high boiling point liquid fuel injected into the combustion chamber of your engine ignites when the air charge has been compressed to a temperature sufficiently high for auto-ignition. Compression engines include diesel engines, dual-fuel engines (engines where liquid fuel, usually diesel fuel, is used for compression ignition and a gaseous fuel, usually natural gas, is used as the primary fuel), and engines that are not spark ignition engines [§63.6675].

Complete the subcategory column of Table 1 for each engine that is a CI stationary RICE.

**Step 6: Which of your engines have requirements under MACT?**

Using the subcategory determined in Step 5 and whether the engine is “new,” “reconstructed,” or “existing,” as determined in Step 4, you can now identify the engines at your major-source facility that are subject to MACT requirements.

The following are not subject any requirements under the NESHAP [§63.6590(b)(3)]:

- Stationary RICE being tested at a stationary RICE test cell/stand;
- Stationary RICE with site rating of 500 brake horsepower or less;
- Existing spark ignition 2SLB stationary RICE;

- Existing spark ignition 4SLB stationary RICE;
- Existing CI stationary RICE;
- Existing stationary RICE that combust landfill or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis;
- Existing emergency stationary RICE; and
- Existing limited use stationary RICE.

Note that you must still keep a record of the MACT applicability determination for 5 years for these engines. [§§63.1(b)(3) and 63.10(b)(3)]

The following new or reconstructed engines have limited requirements under subpart ZZZZ [§63.6590(b)(1) and (2)]:

- Emergency stationary RICE >500 HP;
- Limited use stationary RICE >500 HP; and
- Stationary RICE >500 HP that combust landfill or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis.

The following have full MACT requirements, including emission limitations, operating limitations, and requirements for performance tests, monitoring, recordkeeping and reporting:

- Existing, new, or reconstructed spark ignition 4SRB stationary RICE >500 HP;
- New or reconstructed spark ignition 4SLB stationary RICE >500 HP;
- New or reconstructed spark ignition 2SLB stationary RICE >500 HP;
- New or reconstructed compression ignition (CI) stationary RICE >500 HP.

Table 3 presents a summary of the types of requirements for each engine subcategory. Section 3 presents a timeline of when you must meet the requirements of MACT. Sections 4 through 8 provide a summary of the specific requirements for each engine subcategory.

**Table 3. Summary of Types of Requirements for Engine Subcategories**

Subcategory	No requirements	Initial Notification	Emission Limits	Operating Limits	Monitor, Record and Report Annual Fuel Usage	Performance Tests	Monitoring	Recordkeeping	Reporting
<b>Existing Engines</b>									
Emergency Stationary RICE	√								
Limited Use Stationary RICE	√								
Stationary RICE combusts landfill gas or digester gas	√								
4SLB	√								
2SLB	√								
CI	√								
4SRB		√	√	√		√	√	√	√
<b>New/Reconstructed Engines</b>									
Emergency Stationary RICE		√							
Limited Use Stationary RICE		√							
Stationary RICE combusts landfill gas or digester gas		√			√				
4SLB		√	√	√		√	√	√	√
2SLB		√	√	√		√	√	√	√
CI		√	√	√		√	√	√	√
4SRB		√	√	√		√	√	√	√

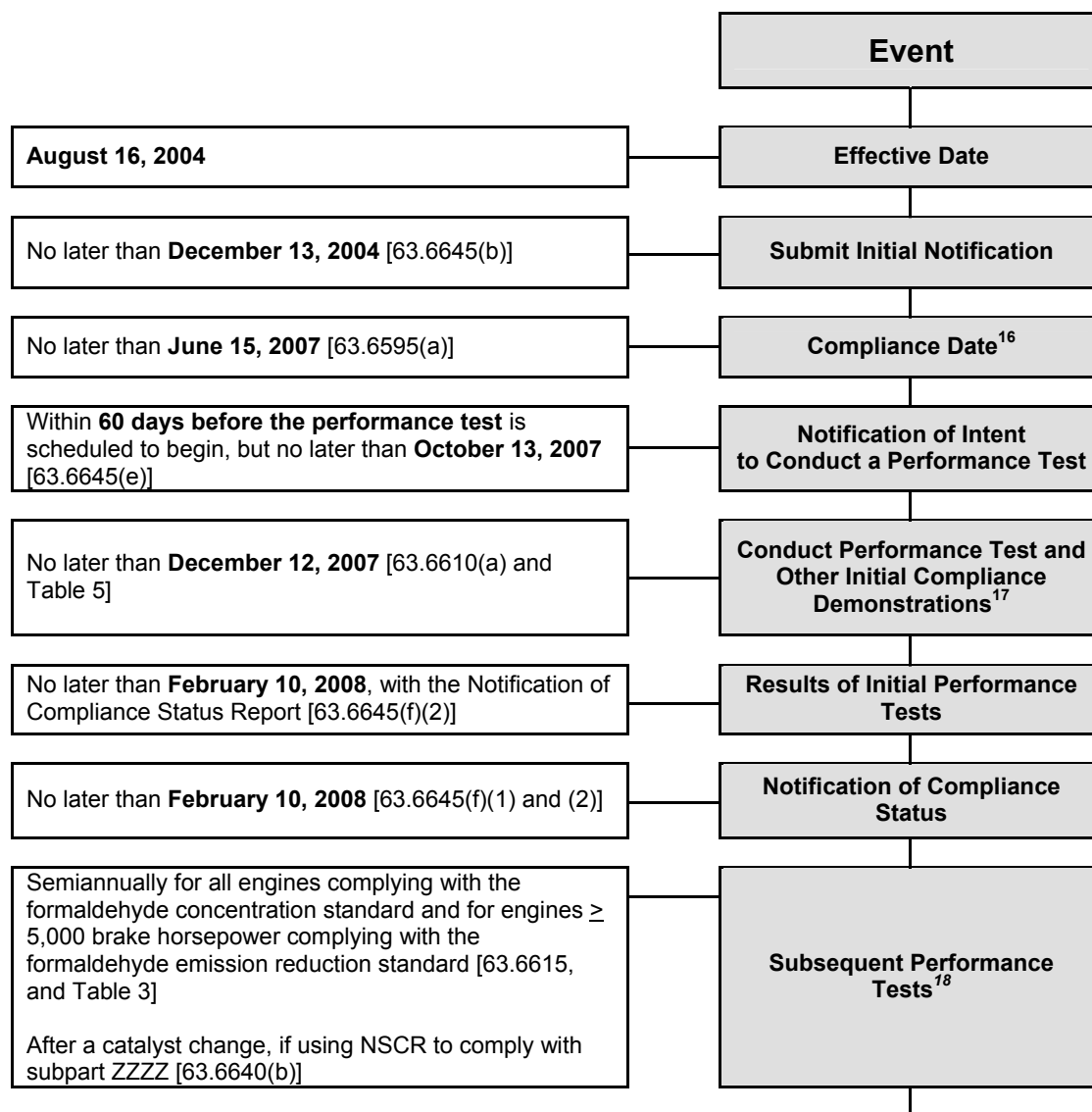


### **3.0 When Do I Have to Meet the MACT Requirements?**

The following figures present the compliance timeline for your stationary RICE. Figure 1 presents the compliance timeline for existing 4SRB stationary RICE. Figure 2 presents the timeline for new or reconstructed 4SRB engines. Figures 3, 4, and 5 present the timelines for new or reconstructed 2SLB, 4SLB, and CI engines, respectively. The timeline for stationary RICE with limited requirements (i.e., emergency engines, limited use engines, and engines that combust landfill or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis) is presented in Figure 6.



**Figure 1. Compliance Timeline<sup>14</sup> for Existing<sup>15</sup> Spark Ignition 4-Stroke Rich Burn Engines**



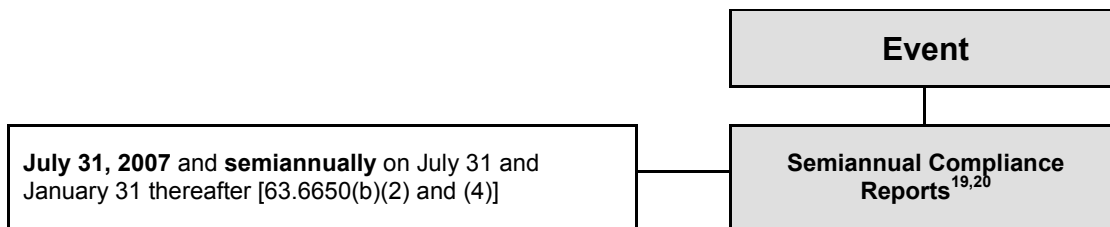
<sup>14</sup> This timeline does not take into account special situations such as compliance extensions.

<sup>15</sup> Existing 4SRB: stationary RICE with a site rating greater than 500 brake horsepower, the construction or reconstruction of which was commenced before December 19, 2002 [63.6590(a)(1)].

<sup>16</sup> For area sources that become a major source: stationary RICE that commence construction after the date the area source becomes a major source must be in compliance upon startup; stationary RICE that commence construction before the date the area source becomes a major source must be in compliance within 3 years after the area source becomes a major source [63.6595(b)].

<sup>17</sup> A performance test must be conducted if complying with emission limitations and operating limitations. An initial performance test is not required if a performance test has previously conducted and the test meets the requirements in 63.6610(d)(1) through (5).

<sup>18</sup> After compliance is demonstrated for two consecutive tests, the frequency of the subsequent tests may be reduced to annually. If any subsequent annual tests indicate that a RICE is not in compliance, semiannual performance testing must be resumed. In addition, you must resume semiannual performance testing if you deviate from any of the operating limits. [Table 3 of Subpart ZZZZ]

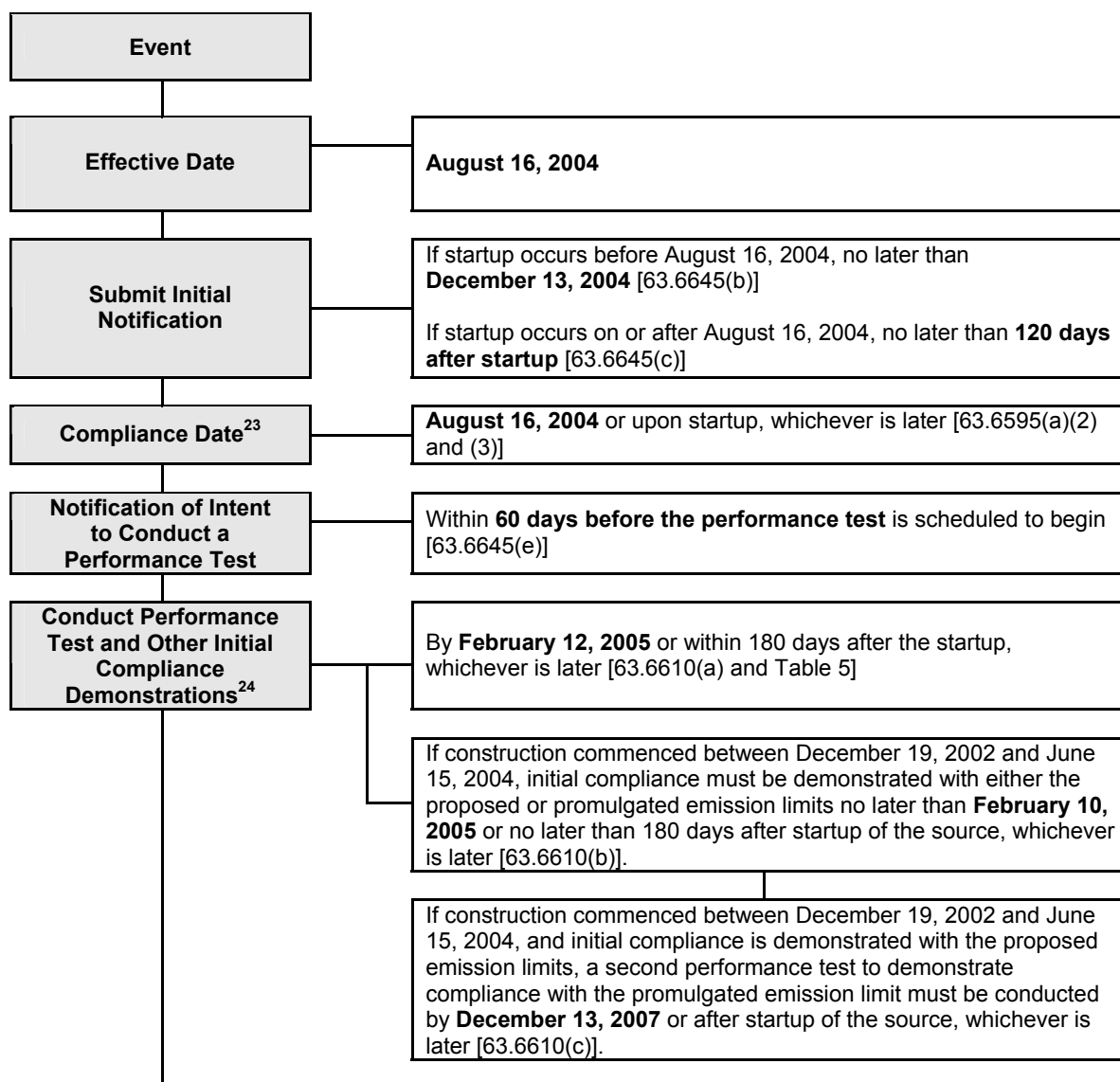


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<sup>19</sup> The initial semiannual report must cover the period beginning on the compliance date and ending on June 30 or December 31, whichever date is the first date following the end of the first calendar half after the compliance date [63.6650(b)(1)]. Subsequent reports cover the semiannual reporting period from January 1 through June 30 or July 1 through December 31 [63.6650(b)(3)].

<sup>20</sup> If you are subject to permitting requirements under title V (40 CFR part 70 or 71), you have the option of submitting your semi-annual compliance reports according to the schedule established by the permitting authority for title V monitoring reports [63.6650(b)(5)].

**Figure 2. Compliance Timeline<sup>21</sup> for New or Reconstructed<sup>22</sup> 4SRB Stationary RICE**

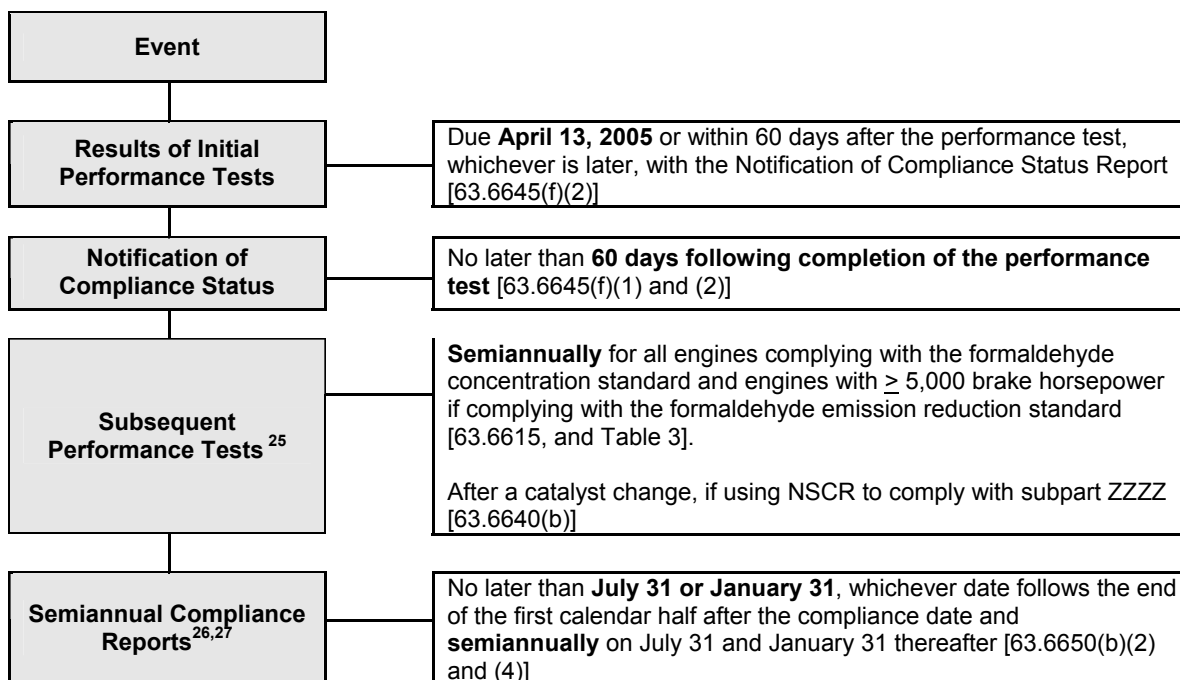


<sup>21</sup> This timeline does not take into account special situations such as compliance extensions.

<sup>22</sup> New or reconstructed stationary RICE: stationary RICE with a site rating greater than 500 brake horsepower, the construction or reconstruction of which was commenced after December 19, 2002 [63.6590(a)(2) and (3)].

<sup>23</sup> For area sources that become a major source: stationary RICE that commence construction after the date the area source becomes a major source must be in compliance upon startup; stationary RICE that commence construction before the date the area source becomes a major source must be in compliance within 3 years after the area source becomes a major source [63.6595(b)].

<sup>24</sup> A performance test must be conducted if complying with emission limitations and operating limitations. An initial performance test is not required if a performance test has previously conducted and the test meets the requirements in 63.6610(d)(1) through (5).

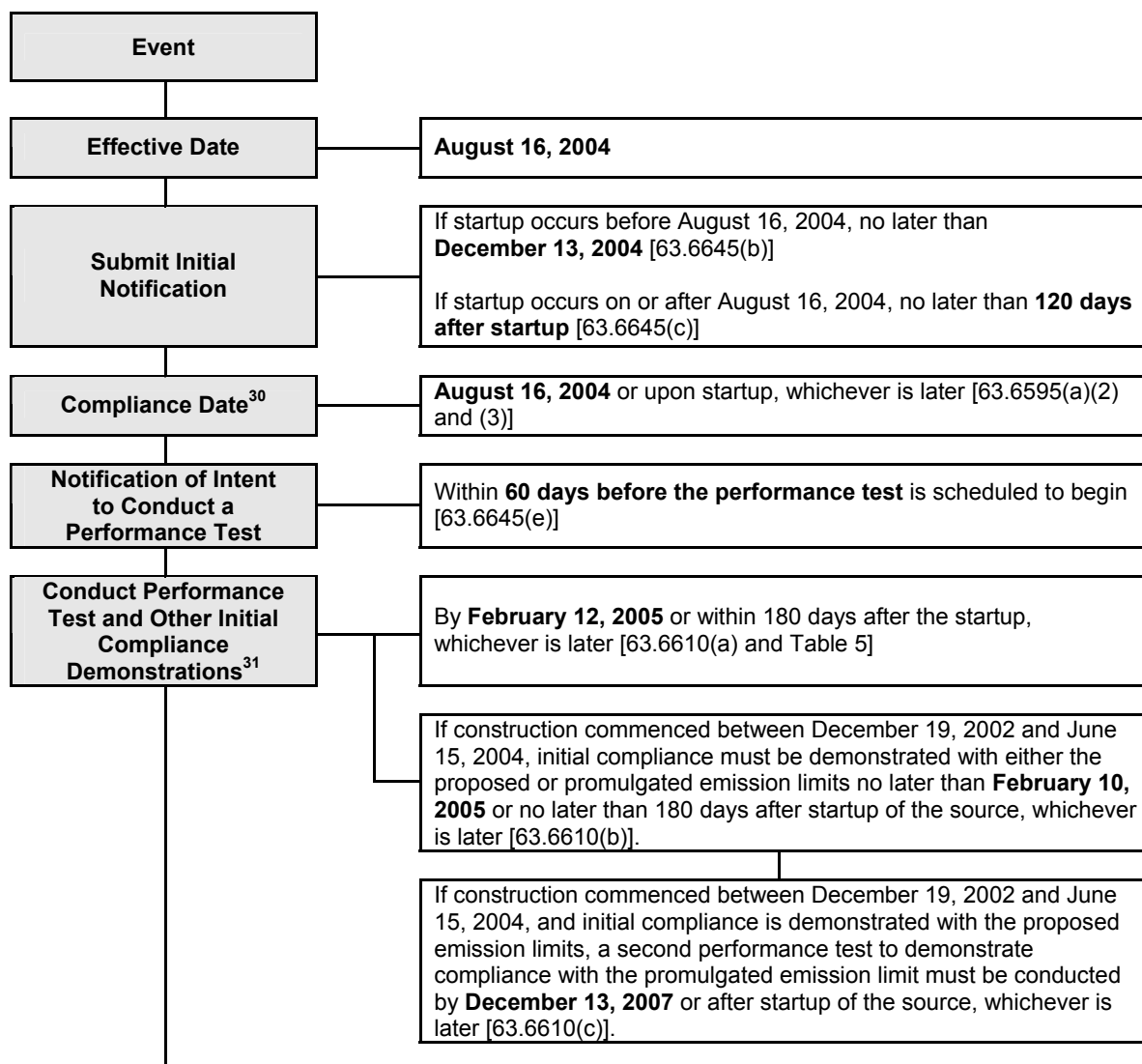


<sup>25</sup> After compliance is demonstrated for two consecutive tests, the frequency of the subsequent tests may be reduced to annually. If any subsequent annual tests indicate that a RICE is not in compliance, semiannual performance testing must be resumed. In addition, you must resume semiannual performance testing if you deviate from any of the operating limits [Table 3].

<sup>26</sup> The initial semiannual report must cover the period beginning on the compliance date and ending on June 30 or December 31, whichever date is the first date following the end of the first calendar half after the compliance date [63.6650(b)(1)]. Subsequent reports cover the semiannual reporting period from January 1 through June 30 or July 1 through December 31 [63.6650(b)(3)].

<sup>27</sup> If you are subject to permitting requirements under title V (40 CFR part 70 or 71), you have the option of submitting your semiannual compliance reports according to the schedule established by the permitting authority for title V monitoring reports [63.6650(b)(5)].

**Figure 3. Compliance Timeline<sup>28</sup> for New or Reconstructed<sup>29</sup> 2SLB Stationary RICE**

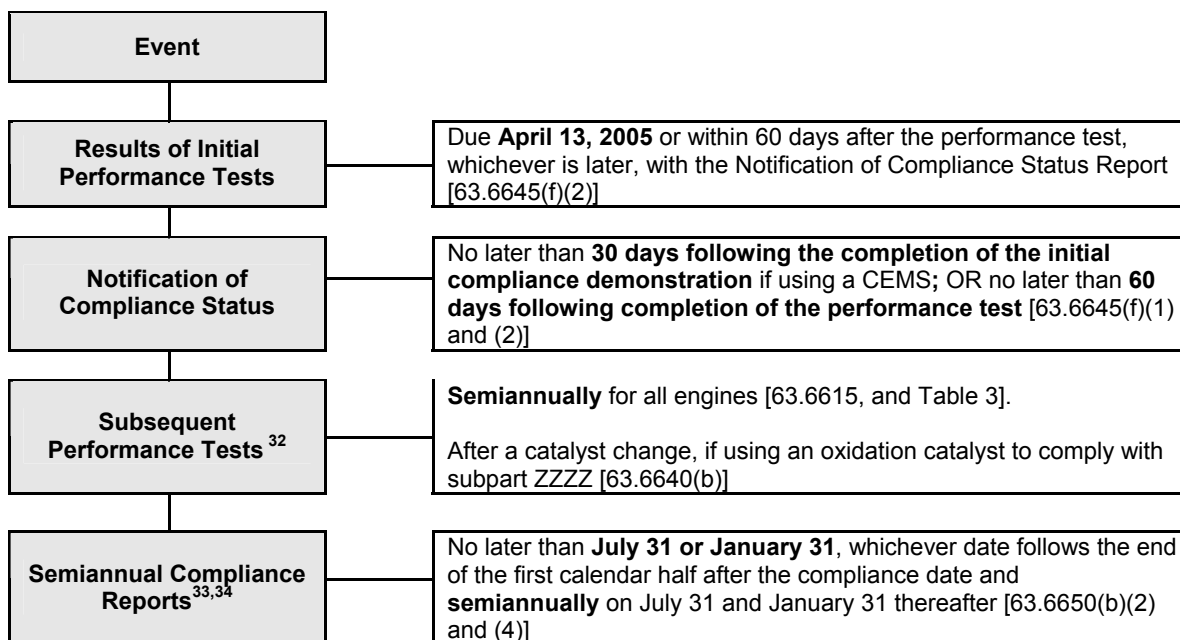


<sup>28</sup> This timeline does not take into account special situations such as compliance extensions.

<sup>29</sup> New or reconstructed stationary RICE: stationary RICE with a site rating greater than 500 brake horsepower, the construction or reconstruction of which was commenced on or after December 19, 2002 [63.6590(a)(2) and (3)].

<sup>30</sup> For area sources that become a major source: stationary RICE that commence construction after the date the area source becomes a major source must be in compliance upon startup; stationary RICE that commence construction before the date the area source becomes a major source must be in compliance within 3 years after the area source becomes a major source [63.6595(b)].

<sup>31</sup> A performance test must be conducted if you are not using a CEMS to comply with emission limitations and operating limitations. If you are using CEMS, you must conduct an initial performance evaluation and relative accuracy test audit of each CEMS and use the first 4-hour period of data after a successful validation of the CEMS to demonstrate initial compliance. An initial performance test is not required if a performance test has previously conducted and the test meets the requirements in 63.6610(d)(1) through (5).

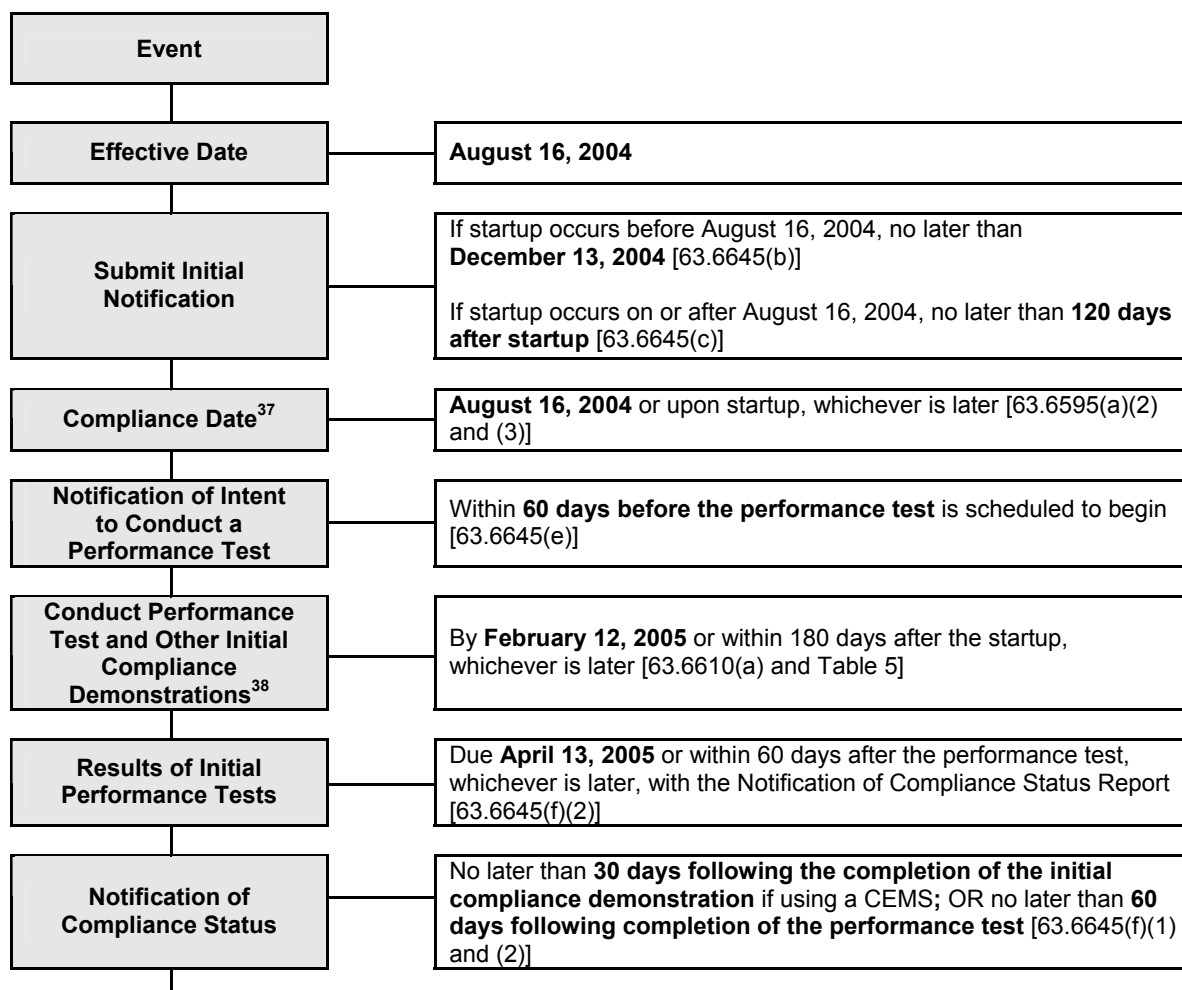


<sup>32</sup> After compliance is demonstrated for two consecutive tests, the frequency of the subsequent tests may be reduced to annually. If any subsequent annual tests indicate that a RICE is not in compliance, semiannual performance testing must be resumed. In addition, you must resume semiannual performance testing if you deviate from any of the operating limits [Table 3].

<sup>33</sup> The initial semiannual report must cover the period beginning on the compliance date and ending on June 30 or December 31, whichever date is the first date following the end of the first calendar half after the compliance date [63.6650(b)(1)]. Subsequent reports cover the semiannual reporting period from January 1 through June 30 or July 1 through December 31 [63.6650(b)(3)].

<sup>34</sup> If you are subject to permitting requirements under title V (40 CFR part 70 or 71), you have the option of submitting your semiannual compliance reports according to the schedule established by the permitting authority for title V monitoring reports [63.6650(b)(5)].

**Figure 4. Compliance Timeline<sup>35</sup> for New or Reconstructed<sup>36</sup> 4SLB Stationary RICE**

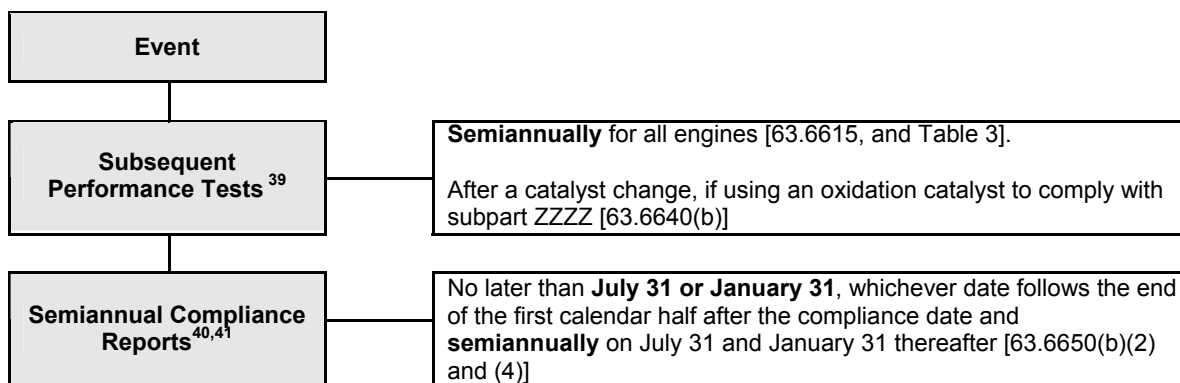


<sup>35</sup> This timeline does not take into account special situations such as compliance extensions.

<sup>36</sup> New or reconstructed stationary RICE: stationary RICE with a site rating greater than 500 brake horsepower, the construction or reconstruction of which was commenced on or after December 19, 2002 [63.6590(a)(2) and (3)].

<sup>37</sup> For area sources that become a major source: stationary RICE that commence construction after the date the area source becomes a major source must be in compliance upon startup; stationary RICE that commence construction before the date the area source becomes a major source must be in compliance within 3 years after the area source becomes a major source [63.6595(b)].

<sup>38</sup> A performance test must be conducted if you are not using a CEMS to comply with emission limitations and operating limitations. If you are using CEMS, you must conduct an initial performance evaluation and relative accuracy test audit of each CEMS and use the first 4-hour period of data after a successful validation of the CEMS to demonstrate initial compliance. An initial performance test is not required if a performance test has previously conducted and the test meets the requirements in 63.6610(d)(1) through (5).

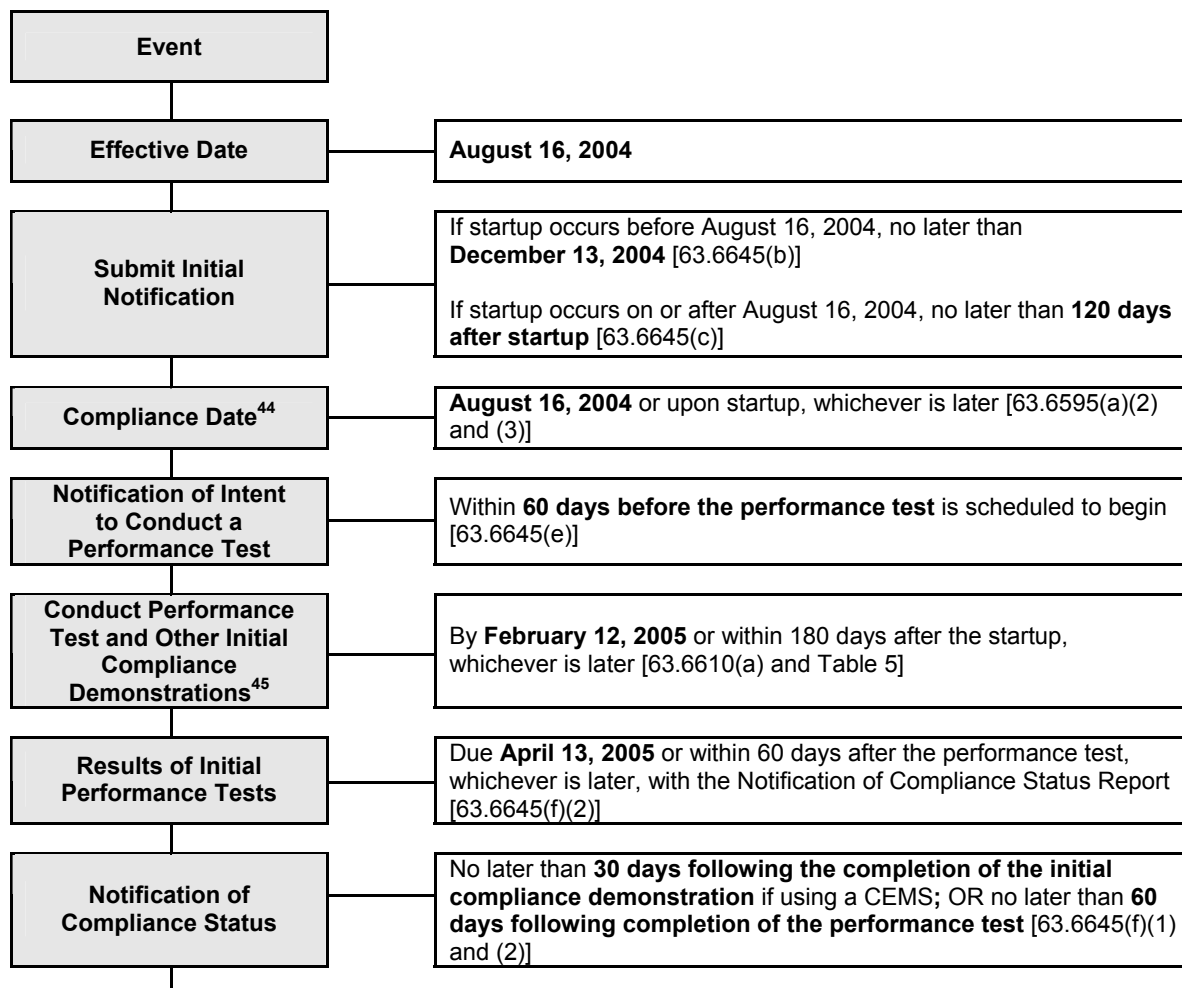


<sup>39</sup> After compliance is demonstrated for two consecutive tests, the frequency of the subsequent tests may be reduced to annually. If any subsequent annual tests indicate that a RICE is not in compliance, semiannual performance testing must be resumed. In addition, you must resume semiannual performance testing if you deviate from any of the operating limits [Table 3].

<sup>40</sup> The initial semiannual report must cover the period beginning on the compliance date and ending on June 30 or December 31, whichever date is the first date following the end of the first calendar half after the compliance date [63.6650(b)(1)]. Subsequent reports cover the semiannual reporting period from January 1 through June 30 or July 1 through December 31 [63.6650(b)(3)].

<sup>41</sup> If you are subject to permitting requirements under title V (40 CFR part 70 or 71), you have the option of submitting your semiannual compliance reports according to the schedule established by the permitting authority for title V monitoring reports [63.6650(b)(5)].

**Figure 5. Compliance Timeline<sup>42</sup> for New or Reconstructed<sup>43</sup> CI Stationary RICE**

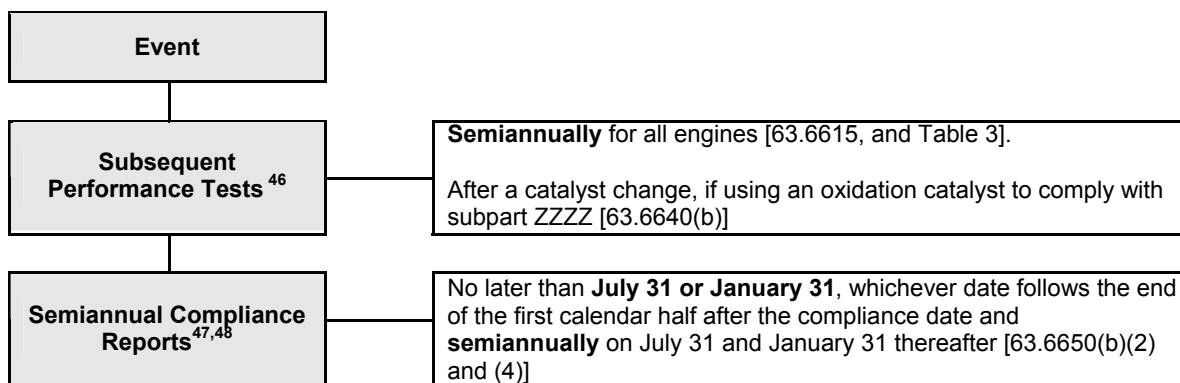


<sup>42</sup> This timeline does not take into account special situations such as compliance extensions.

<sup>43</sup> New or reconstructed stationary RICE: stationary RICE with a site rating greater than 500 brake horsepower, the construction or reconstruction of which was commenced on or after December 19, 2002 [63.6590(a)(2) and (3)].

<sup>44</sup> For area sources that become a major source: stationary RICE that commence construction after the date the area source becomes a major source must be in compliance upon startup; stationary RICE that commence construction before the date the area source becomes a major source must be in compliance within 3 years after the area source becomes a major source [63.6595(b)].

<sup>45</sup> A performance test must be conducted if you are not using a CEMS to comply with emission limitations and operating limitations. If you are using CEMS, you must conduct an initial performance evaluation and relative accuracy test audit of each CEMS and use the first 4-hour period of data after a successful validation of the CEMS to demonstrate initial compliance. An initial performance test is not required if a performance test has previously conducted and the test meets the requirements in 63.6610(d)(1) through (5).



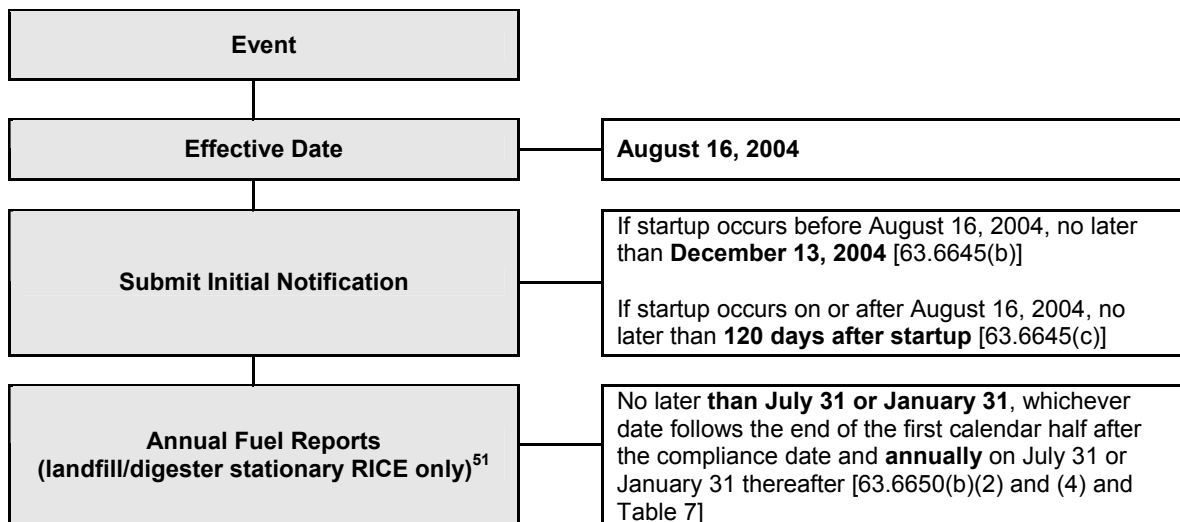
<sup>46</sup> After compliance is demonstrated for two consecutive tests, the frequency of the subsequent tests may be reduced to annually. If any subsequent annual tests indicate that a RICE is not in compliance, semiannual performance testing must be resumed. In addition, you must resume semiannual performance testing if you deviate from any of the operating limits [Table 3].

<sup>47</sup> The initial semiannual report must cover the period beginning on the compliance date and ending on June 30 or December 31, whichever date is the first date following the end of the first calendar half after the compliance date [63.6650(b)(1)]. Subsequent reports cover the semiannual reporting period from January 1 through June 30 or July 1 through December 31 [63.6650(b)(3)].

<sup>48</sup> If you are subject to permitting requirements under title V (40 CFR part 70 or 71), you have the option of submitting your semiannual compliance reports according to the schedule established by the permitting authority for title V monitoring reports [63.6650(b)(5)].

**Figure 6. Compliance Timeline<sup>49</sup> for New or Reconstructed<sup>50</sup> Stationary RICE with Limited Requirements**

This timeline only applies to new or reconstructed stationary RICE with limited requirements under '63.6590(b): emergency stationary RICE, limited use stationary RICE, and stationary RICE which combust landfill or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis (referred to as landfill/digester stationary RICE).



<sup>49</sup> This timeline does not take into account special situations such as compliance extensions.

<sup>50</sup> New or reconstructed stationary RICE: stationary RICE with a site rating greater than 500 brake horsepower, the construction or reconstruction of which was commenced on or after December 19, 2002 [63.6590(a)(2) and (3)].

<sup>51</sup> If you are subject to permitting requirements under title V (40 CFR part 70 or 71), you have the option of submitting your annual reports according to the title V permitting schedule established by the permitting authority [63.6650(b)(5)].



## **4.0 What are the MACT Requirements for 4-Stroke Rich Burn Engines?**

The purpose of this section is to provide a detailed summary of the MACT requirements for 4-Stroke Rich Burn (4SRB) stationary RICE. For each 4SRB stationary RICE subject to Subpart ZZZZ, you have to comply with the full MACT requirements, including emission limitations, operating limitations, and requirements for performance tests, monitoring, recordkeeping and reporting. The following sections provide a detailed summary of these requirements.

1. What are the Emission Limitations?
2. What are the Emission Testing Requirements?
3. What are the Operating Limits and Parameter Monitoring Requirements If I Am Using NSCR?
4. What are the Operating Limits and Parameter Monitoring Requirements If I Am Not Using NSCR?
5. What are the Startup, Shutdown, and Malfunction Requirements?
6. What Records Must I Keep?
7. What Notification and Reports Must I Submit?

If you do not have a 4SRB stationary RICE, you may skip this section.

#### **4.1 What Are The Emission Limitations?**

For each new, reconstructed or existing spark ignition 4SRB stationary RICE subject to Subpart ZZZZ, you must comply with ONE of the following emission limitations at 100 percent load plus or minus 10 percent [Table 1a]:

- Reduce formaldehyde emissions by 76 percent or more (referred to as the formaldehyde percent reduction limit); OR
- Limit the formaldehyde concentration in the stationary RICE exhaust to 350 parts per billion, by volume on a dry basis (ppbvd) at 15 percent O<sub>2</sub> (referred to as the formaldehyde concentration limit)

If you have a new or reconstructed 4SRB stationary RICE that commenced construction or reconstruction between December 19, 2002 and June 15, 2004, you may choose to reduce formaldehyde emissions by 75 percent or more until June 15, 2007 [Table 1a]. After June 15, 2007, you must comply with ONE of the final formaldehyde emission limitations listed above. This provision is included because the final formaldehyde percent reduction limit (76%) is more stringent than the proposed limit (75%).

You may meet the applicable emission limitation by using non-selective catalytic reduction (NSCR) or an alternative method of control. Whichever method of control you choose, you will have emission testing requirements; operating limits and parameter monitoring requirements; startup, shutdown, and malfunction requirements; recordkeeping requirements; and notification and reporting requirements. You will have different operating limitations and monitoring requirements depending on the method of control you choose. Refer to the summary of operating parameter and monitoring requirements under section 4.3 if you are using NSCR and section 4.4 if you are using an alternative method of control.

## 4.2 What Are The Emission Testing Requirements?

You must conduct emission testing on all 4SRB engines subject to Subpart ZZZZ to show that you are meeting ONE of the applicable emission limitations (as discussed in Section 4.1). For MACT, emission tests are called “performance tests.” The following performance tests are required for Subpart ZZZZ:

- You must conduct an initial performance test for all 4SRB engines subject to Subpart ZZZZ (see section 4.2.2).
- You must conduct semi-annual performance tests if your 4SRB stationary RICE has a brake horsepower greater than or equal to 5,000 AND you are complying with the formaldehyde percent reduction limit, or if you are complying with the formaldehyde concentration limit (regardless of engine size) (see section 4.2.3).
- If you are using a catalyst, such as NSCR, to comply with Subpart ZZZZ, you also must conduct a performance test if you change your catalyst (see section 4.2.4).

In all cases, the emission tests must be conducted according to the requirements included in Subpart ZZZZ, discussed below (see Section 4.2.1).

### 4.2.1 How do I conduct my performance tests?

The following provisions apply to all performance tests:

- You must conduct the tests using the test methods and other test procedures included in Table 4 of Subpart ZZZZ. These provisions are discussed further in Sections 4.2.1.1 and 4.2.1.2 below.
- The tests must be conducted while the engine is operating at 100 percent load plus or minus 10 percent. [63.6620(b)]
- The tests must NOT be conducted during startup, shutdown, or malfunction (SSM) events (see section 4.5 of this document for details on SSM requirements) [§§63.6620(c) and 63.7(e)(1)].
- The tests must include at least three separate test runs, and each test run must last at least one hour [63.6620(d)].
- Operating parameters must be measured during the performance test (see section 4.2.2.1 for operating parameters)
- Determination of engine load must be documented, including the calculations, assumptions, and measurement devices used to measure or estimate the percent load. This information must be submitted in a written report with the performance test results (see section 4.7.4 of this document for the information that must be included in this report).
- You must record ambient temperature, pressure, and humidity for the percent load determination and include the data in a written report (see section 4.7.4 of this document for the information that must be included in this report).

#### 4.2.1.1 What performance test requirements do I have to follow if I am complying with the formaldehyde percent reduction limitation?

If you are complying with the formaldehyde percent reduction limit you must conduct all of your performance tests using the following criteria [Table 4, item 2].

1. You must select the location of the sampling port and the number of traverse points using Method 1 or 1A (40 CFR part 60, appendix A). You must choose sampling sites that are located at the inlet and the outlet of the NSCR or other control device; AND
2. You must measure the O<sub>2</sub> concentration at the inlet and outlet of the NSCR or other control device using Method 3, 3A or 3B (40 CFR part 60, appendix A). You must take the measurements to determine the O<sub>2</sub> concentration at the same time as the measurements for the formaldehyde concentration; AND
3. You must measure the moisture content at the inlet and outlet of the NSCR or other control device using Method 4 (40 CFR part 60, appendix A), or Method 320 (40 CFR part 63, appendix A), or ASTM D 6348-03. You must take the measurements to determine the moisture content at the same time and location as the measurements for the formaldehyde concentration; AND
4. You must measure formaldehyde at the inlet and the outlet of the NSCR or other control device using Method 320 or 323 (40 CFR part 60, appendix A), ASTM D6348-03,<sup>52</sup> provided in ASTM D6348-03 Annex A5 (Analyte Spiking Technique), the percent R must be  $\geq 70$  and  $\leq 130$ . You must convert the formaldehyde concentration to 15% O<sub>2</sub>, dry basis. Results of this test consist of the average of the three 1-hr or longer runs.

Determine compliance with the percent reduction requirement using the following set of equations [§63.6620(e)]:

$$R = \frac{C_i - C_o}{C_i} \times 100$$

Where:

- C<sub>i</sub> = concentration of formaldehyde at the NSCR control device inlet,  
C<sub>o</sub> = concentration of formaldehyde at the NSCR control device outlet,  
R = percent reduction of formaldehyde emissions.

You are required to normalize the formaldehyde concentration at the inlet and outlet of the NSCR or other control device to 15% O<sub>2</sub> and a dry basis, or an equivalent percent CO<sub>2</sub>. Use a CO<sub>2</sub> correction factor if CO<sub>2</sub> concentration is measured as an exhaust diluent in lieu of measuring O<sub>2</sub> concentration.

#### ***CO<sub>2</sub> correction factor:***

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<sup>52</sup> You may obtain a copy of ASTM-D6348-03 from at least one of the following addresses: American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, or University Microfilms International, 300 North Zeeb Road, Ann Arbor, MI 48106.

Step 1: Calculate the fuel-specific  $F_o$  value for the fuel burned during the test.

$$F_o = \frac{0.209 F_d}{F_c}$$

Where:

- $F_o$  = Fuel factor based on the ratio of oxygen volume to the ultimate  $CO_2$  volume produced by the fuel at zero percent excess air.  
 $0.209$  = Fraction of air that is oxygen, percent/100.  
 $F_d$  = Ratio of the volume of dry effluent gas to the gross calorific value of the fuel from Method 19, dsm<sup>3</sup>/J (dscf/106 Btu).  
 $F_c$  = Ratio of the volume of  $CO_2$  produced to the gross calorific value of the fuel from Method 19, dsm<sup>3</sup>/J (dscf/106 Btu).

Step 2: Calculate the  $CO_2$  correction factor for correcting measurement data to 15 percent oxygen.

$$X_{CO_2} = \frac{5.9}{F_o}$$

Where:

- $X_{CO_2}$  =  $CO_2$  correction factor, percent.  
 $5.9$  =  $20.9$  percent  $O_2$  -  $15$  percent  $O_2$ , the defined  $O_2$  correction value, percent.

Step 3: Calculate the  $NO_x$  and  $SO_2$  gas concentrations adjusted to 15 percent  $O_2$  using  $CO_2$  as follows:

$$C_{adj} = C_d \frac{X_{CO_2}}{\%CO_2}$$

Where:

- $\%CO_2$  = Measured  $CO_2$  concentration measured, dry basis, percent.

#### 4.2.1.2 What performance test requirements do I have to follow if I am complying with the formaldehyde concentration limitation?

If you are complying with the requirement to limit the formaldehyde concentration you must conduct your initial and all subsequent performance tests using the following criteria [Table 4, item 3]:

1. You must select the location of the sampling port and the number of traverse points using Method 1 or 1A (40 CFR part 60, appendix A). You must choose a sampling site that is located at the outlet of the NSCR or other control device;  
AND

2. You must determine the O<sub>2</sub> concentration of the 4SRB stationary RICE exhaust at the sampling port location using Method 3, 3A or 3B (40 CFR part 60, appendix A). You must take the measurements to determine the O<sub>2</sub> concentration at the same time and location as the measurements for the formaldehyde concentration; AND
3. You must measure the moisture content of the 4SRB stationary RICE exhaust at the sampling port location using Method 4 (40 CFR part 60, appendix A) or Method 320 (40 CFR part 63, appendix A) or ASTM D 6348-03. You must take measurements to determine the moisture content at the same time and location as the measurements for the formaldehyde concentration; AND
4. You must measure formaldehyde at the exhaust of the stationary RICE using Method 320 or 323 (40 CFR part 60, appendix A), or ASTM D6348-03,<sup>53</sup> provided in ASTM D6348-03 Annex A5 (Analyte Spiking Technique), the percent R must be  $\geq 70$  and  $\leq 130$ . You must convert the formaldehyde concentration to 15% O<sub>2</sub>, dry basis. Results of this test consist of the average of the three 1-hr or longer runs.

#### 4.2.2 Initial Performance Test

You must conduct an initial performance test for all 4SRB engines subject to Subpart ZZZZ to show that you are meeting either the formaldehyde percent reduction limit or the formaldehyde concentration limit. The initial performance test must be conducted using the methods and test procedures presented in Section 4.2.1.

The results of the initial performance test must show that you have reduced formaldehyde emissions by 76 percent or more or the formaldehyde concentration in your stationary RICE exhaust is less than 350 ppbvd at 15 percent O<sub>2</sub> [§63.6630(a)].

If you have a new or reconstructed 4SRB stationary RICE that commenced construction or reconstruction between December 19, 2002 and June 15, 2004, you may choose to demonstrate compliance with the optional emission limitation of 75 percent or more reduction of formaldehyde during the initial performance test. In that case, you must conduct an additional performance test by December 13, 2007 to demonstrate compliance with ONE of the final emission limitations included in Subpart ZZZZ. [§63.6610(c)]

##### 4.2.2.1 Measuring Operating Parameters During the Initial Performance Test

If you use NSCR to comply with MACT, you must record two operating parameters during the initial performance test:

- pressure drop across the NSCR catalyst (Table 5, items 4 and 6); and
- inlet temperature to the NSCR catalyst.

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<sup>53</sup> You may obtain a copy of ASTM-D6348-03 from at least one of the following addresses: American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, or University Microfilms International, 300 North Zeeb Road, Ann Arbor, MI 48106.

If you are not using NSCR and EPA has approved your petition to establish operating limitations, you must record parameters during the initial performance test in accordance with EPA's approval of your petition to establish operating limitations (Table 5, items 5 and 7). These values will be used to establish your operating limits (see Sections 4.3 or 4.4 of this document). Note that you should not conduct the initial performance test until EPA acts on your petition [§63.6620(f)].

If you are not using NSCR and EPA approved your petition EPA to establish NO operating limitations, you are not required to record parameters during the initial performance test. Note that you should not conduct the initial performance test until EPA acts on your petition [§63.6620(f)].

#### 4.2.2.2 When do I have to conduct the initial performance test?

For existing 4SRB engines:

You have to conduct the initial performance test on your existing 4SRB stationary RICE no later than December 12, 2007 [§63.6610(a)].

For new or reconstructed 4SRB engines:

If construction/reconstruction of the new or reconstructed 4SRB commences after June 15, 2004, you must conduct the initial compliance test within 180 days after you start up the new or reconstructed engine [§63.6610(a)].

If you have a new or reconstructed 4SRB stationary RICE that commenced construction (or reconstruction) between December 19, 2002 and June 15, 2004, you have to conduct the initial performance test no later than February 10, 2005 or no later than 180 days after startup of your engine, whichever date is later [§63.6610(b)].

For engines that opt to comply initially with 75% reduction of formaldehyde:  
If you have chosen to reduce formaldehyde emissions by the 75-percent emission limitation from the proposed rule [67 FR 77830, §63.6600(a)], you must conduct the initial performance test by the deadlines discussed above.

In addition, you must conduct a second performance test by December 13, 2007 to show that you are now complying with the 76-percent emission limitation from the final rule after June 15, 2007 [§63.6610(c)].

#### 4.2.2.3 When is an initial performance test not required?

You do not have to perform an initial performance test if you have conducted a performance test on your 4SRB stationary RICE that meets the following criteria:

1. The test was conducted using the same test methods specified in section 4.2.1.1 or 4.2.1.2 of this document, and you followed these methods correctly.
2. The test is not older than 2 years.

3. The test has been reviewed and accepted by EPA.
4. No process or equipment changes have been made since the test was performed, or you can demonstrate that the results of the performance test, with or without adjustments, reliably demonstrate compliance despite process or equipment changes.
5. The test was conducted at any load condition within  $\pm 10$  percent of 100 percent load.

#### 4.2.3 Semiannual Performance Tests

You must conduct semi-annual performance tests if:

- You are complying with the formaldehyde percent reduction limit AND your 4SRB stationary RICE has a brake horsepower greater than or equal to 5,000.
- You are complying with the formaldehyde concentration limit (regardless of engine size) [§63.6615 and Table 3].

If you conduct two consecutive performance tests and are in compliance with the applicable emission limitation, you may conduct the subsequent performance tests on an annual basis. You must resume semi-annual tests if:

- Any subsequent performance test shows that you are not in compliance with your emission limit, or
- You deviate from any of your operating limitations [Table 3, footnote].

#### 4.2.4 Other Required Tests

If you are using a catalyst, such as NSCR, to comply with Subpart ZZZZ, and you change the catalyst, you are required to conduct a performance test to show that you are meeting the applicable emission limitation. You must also reestablish the values of the operating parameters measured during the initial performance test [§63.6640(b)]. If you are using NSCR to comply with MACT, you must reestablish the initial pressure drop for the NSCR catalyst and measure the inlet temperature to the catalyst during the catalyst-change performance test.

#### 4.2.5 Reports and Notifications for Performance Tests

The reports and notifications required for performance tests are presented in the table below:

**Reports and Notifications for All Performance Tests**

<b>Performance Test Requirement</b>	<b>Deadline</b>
Notification of Intent to Conduct a Performance Test	60 days before test date
Site-Specific Test Plan & Submit to EPA or Delegated Authority if Submittal is Requested	60 days before test date or mutually agreed date

### **Reports and Notifications for All Performance Tests**

<b>Performance Test Requirement</b>	<b>Deadline</b>
Contact EPA or Delegated Authority to Request Performance Audit Materials	30 days before test date
Submit Results of Performance Test with Notification of Compliance Status Report	60 days after test completion (Completion = date field sample collection is completed)

These reports and notifications are discussed further in Sections 4.6 and 4.7.

### **4.3 What are the Operating Limits and Parameter Monitoring Requirements If I am Using NSCR?**

In addition to meeting emission limitations, you must also meet certain operating limits. The operating limits for 4SRB engines are presented in Table 1b of Subpart ZZZZ.

It is important to note that these operating limits are enforceable independent of the emission limits – they are not triggers to assess your emissions. Instead they are separate and enforceable limits.

This section presents the operating limit and parameter monitoring requirements if you are using non-selective catalytic reduction (NSCR) to meet the applicable formaldehyde emission limit. If you are not using NSCR, section 4.4 presents the operating limit and parameter monitoring requirements for other control technologies.

The operating limits and parameter monitoring requirements are the same for both the 76-percent formaldehyde percent reduction and the 360-ppbvd formaldehyde concentration requirement.

#### **4.3.1 Operating Limits for 4SRB Engines using NSCR to Comply with MACT**

Two operating limits apply for 4SRB engines using NSCR to comply with MACT:

- Maintain your catalyst so that the pressure drop across the catalyst does not change by more than two inches of water at 100 percent load plus or minus 10 percent from the pressure drop across the catalyst measured during the initial performance test; and
- Maintain the temperature of your engine exhaust so that the catalyst inlet temperature is greater than or equal to 750°F and less than or equal to 1250°F.

Note that you establish the initial pressure drop across the catalyst during the initial performance test. The allowable range for pressure drop is  $\pm 2''$  WC from the initial pressure drop. Also note that if you change your catalyst, you are required to reestablish the initial pressure drop for the new catalyst element.

As discussed further below, to demonstrate compliance with these operating limits, you must measure pressure drop across the catalyst monthly, and you must continuously monitor temperature at the catalyst inlet (i.e., the stationary RICE exhaust temperature at the catalyst inlet).

#### **4.3.2 Monthly Pressure Drop Measurements**

You demonstrate that you are meeting the pressure drop operating limit by measuring the pressure drop across the NSCR once a month [Table 6, items 4 and 7]. The monthly pressure drop measurements should be taken while the engine is operating at 100% load  $\pm 10\%$ .

You are meeting the operating limit if the pressure drop measured each month is within two inches of water of the pressure drop measured during the performance test [Table 1b, item 1].

#### 4.3.3 Continuous Catalyst Inlet Temperature Monitoring

You are required to install and operate a Continuous Parameter Monitoring System (CPMS) to measure NSCR inlet temperature [Table 5, items 4 and 6]. You must collect the NSCR inlet temperature data and reduce these data to 4-hour rolling averages [Table 6, items 4 and 7].<sup>54</sup> You are meeting the NSCR inlet temperature operating limit if the 4-hour rolling average NSCR inlet temperature is greater than or equal to 750°F or less than or equal to 1,250°F [Table 1b, item 1].

#### 4.3.4 Continuous Parameter Monitoring System Requirements

For each stationary RICE, you are required to install a CPMS to continuously monitor catalyst inlet temperature (Table 5, items 4 and 6). For each CPMS, you are required to follow certain operation and maintenance requirements; prepare a quality control program; and conduct performance evaluations.

##### 4.3.4.1 Operation and maintenance requirements for CPMS

There are several operation and maintenance requirements for your CPMS [§63.8(c)]:

- You must operate the CPMS at all times, including during periods of startup, shutdown, or malfunction;
- You must have the necessary parts for routine repairs of the CPMS readily available;
- You must develop a written startup, shutdown, and malfunction (SSM) plan for CPMS (see section 4.5 of this document for specific SSM plan requirements);
- The read-out (i.e., visual display or record), or some indication of operation, from your CPMS must be readily accessible for control or inspection by the equipment operator;
- You must install and have the CPMS operational and have the data verified before or at the time of the initial performance test (you verify the operational status of your CPMS by, at a minimum, completing the manufacturer's written specifications or recommendations for installation, operation and calibration of the system);
- You must operate the CPMS continuously except for system breakdowns, out-of-control periods, repairs, maintenance periods, calibration checks, and zero (low-level) and high-level calibration drift adjustments;
- You must calibrate the CPMS prior to use;
- You must check each CPMS daily for indication that the system is responding;

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<sup>54</sup> To calculate a rolling average, each hour you calculate the average NSCR inlet temperature for the current hour and the previous three hours.

- If the CPMS has an internal system check, you must record and check the results on a daily basis for proper operation;
- If you have a CPMS that is out of control,<sup>55</sup> you are required to take the necessary corrective action and repeat all necessary tests which indicate that the system is out of control. You also are required to take corrective actions and conduct retesting until the performance requirements are below the applicable limits. You may not use data recorded during periods that the CPMS is out of control in data averages or calculations.
- If you have a CPMS that is out of control,<sup>56</sup> you have to submit all information concerning out-of-control periods, including start and end dates, hours, and descriptions of your corrective actions in the semiannual compliance report (see section 4.7 of this document for more details on this report).

#### 4.3.4.2 Quality Control Program

You are required to develop and implement a quality control program for your CPMS [§63.8(d)]. The program must contain a written protocol that describes the procedures for the following operations:

- Initial and any subsequent calibration of the CPMS;
- Determination and adjustment of the calibration drift of the CPMS;
- Preventive maintenance of the CPMS, including spare parts inventory;
- Data recording, calculations, and reporting;
- Accuracy audit procedures, including sampling and analysis methods; and
- Program of corrective action for a malfunctioning CPMS.

You are required to maintain these written procedures on record for the life of the stationary RICE or until your stationary RICE is no longer subject to the RICE MACT. If appropriate, you may incorporate these written procedures as part of your SSM plan to avoid duplicating planning and recordkeeping efforts.

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<sup>55</sup> Your CPMS is considered out of control if: (1) the zero (low-level), mid-level (if applicable), or high-level calibration drift (CD) exceeds two times the applicable CD specification in the performance standard; or (2) the CPMS fails a performance test audit (e.g., cylinder gas audit), relative accuracy audit, relative accuracy test audit, or linearity test audit. The beginning of the out-of-control period is the hour you conduct a performance check (e.g., CD) that indicates an exceedance of the established performance requirements. The end of the out-of-control period is the hour following the completion of the corrective action and successful demonstration that the system is within the allowable limits.

<sup>56</sup> Your CPMS is considered out of control if: (1) the zero (low-level), mid-level (if applicable), or high-level calibration drift (CD) exceeds two times the applicable CD specification in the performance standard; or (2) the CPMS fails a performance test audit (e.g., cylinder gas audit), relative accuracy audit, relative accuracy test audit, or linearity test audit. The beginning of the out-of-control period is the hour you conduct a performance check (e.g., CD) that indicates an exceedance of the established performance requirements. The end of the out-of-control period is the hour following the completion of the corrective action and successful demonstration that the system is within the allowable limits.

#### 4.3.4.3 Performance Evaluation

You are required to conduct a performance evaluation for each CPMS [§63.8(e)]. You must conduct the performance evaluation on your CPMS during the initial performance test required under the RICE MACT. You are required to notify the Administrator in writing of the date that you are going to conduct your performance evaluation at the same time as the notification to conduct your performance test.

Before conducting the performance evaluation, you must prepare a site-specific performance evaluation test plan. The following elements must be included in the test plan:

- the evaluation program objectives;
- an evaluation program summary;
- the performance evaluation schedule;
- data quality objectives (the pre-evaluation expectations of precision, accuracy, and completeness of data);
- an internal QA program, which must include, at a minimum, the activities planned by routine operators and analysts to provide an assessment of CPMS performance; and
- an external QA program which must include, at a minimum, systems audits that include the opportunity for on-site evaluation by the Administrator of instrument calibration, data validation, sample logging, and documentation of quality control data and field maintenance activities.

You must submit the performance evaluation test plan ONLY if requested by EPA or the delegated authority. If requested, the site-specific performance evaluation test plan must be submitted at least 60 days before the performance test or performance evaluation is scheduled to begin, or on a mutually agreed upon date. The Administrator will review and approve the performance evaluation test plan at the same time as the review and approval of the site-specific test plan (if review of the site-specific test plan is requested). The Administrator may request additional relevant information after the submittal of a site-specific performance evaluation test plan.

If the Administrator fails to approve or disapprove the site-specific performance evaluation test plan within the 30 calendar days after receipt of the test plan, the following conditions apply:

- If you intend to demonstrate compliance using the monitoring method(s) specified in the RICE MACT, you are required to conduct the performance evaluation at the same time as the performance test using the specified method(s);
- If you intend to demonstrate compliance by using an alternative monitoring method, you must not conduct the performance evaluation until the Administrator approves the use of the alternative method. If the Administrator does not approve the alternative method within 30 days before the performance evaluation is scheduled to begin, the performance evaluation deadlines may be extended such that you must conduct the performance evaluation within 60 calendar days after the Administrator approves the use of the alternative method. You may proceed to

conduct the performance evaluation (without the Administrator's prior approval of the site-specific performance evaluation test plan) if you subsequently choose to use the specified monitoring method(s) instead of an alternative.

#### **4.4 What are the Operating Limits and Parameter Monitoring Requirements If I am not Using NSCR?**

If you choose to meet the formaldehyde emission limits using a control technique other than NSCR, you are required to petition the Administrator for approval of operating limitations to be established during the initial performance test. If you feel that no operating limits are appropriate for your technology, you may also petition the Administrator for approval of no operating limitations. Your petition has to receive approval from the Administrator before you can conduct your initial performance test [§63.6620(f)].

##### **4.4.1 Petition for Approval of Operating Limitations**

If you petition the Administrator for approval of operating limitations, the petition must contain the following information [§63.6620(g)]:

- You must identify the specific parameters you propose to use as operating limitations;
- You must provide a discussion of the relationship between these parameters and HAP emissions, identifying how HAP emissions change with changes in these parameters, and how limitations on these parameters will serve to limit HAP emissions;
- You must provide a discussion of how you will establish the upper and/or lower values for these parameters which will establish the limits on these parameters in the operating limitations;
- You must provide a discussion identifying the methods you will use to measure and the instruments you will use to monitor these parameters, as well as the relative accuracy and precision of these methods and instruments; and
- You must provide a discussion identifying the frequency and methods for recalibrating the instruments you will use for monitoring these parameters.

##### **4.4.2 Petition for Approval of No Operating Limitations**

If you petition the Administrator for approval of no operating limitations, your petition must include the following information [§63.6620(h)]:

- You must identify the parameters associated with operation of the stationary RICE and the emission control device which could change intentionally (e.g., operator adjustment, automatic controller adjustment, etc.) or unintentionally (e.g., wear and tear, error, etc.) on a routine basis or over time;
- You must provide a discussion of the relationship, if any, between changes in the parameters and changes in HAP emissions;
- For the parameters which could change in such a way as to increase HAP emissions, you must provide a discussion of whether establishing limitations on the parameters would serve to limit HAP emissions;
- For the parameters which could change in such a way as to increase HAP emissions, you must provide a discussion of how you could establish upper and/or

lower values for the parameters which would establish limits on the parameters in operating limitations;

- For the parameters which could change in such a way as to increase HAP emissions, you must provide a discussion identifying the methods you could use to measure them and the instruments you could use to monitor them, as well as the relative accuracy and precision of the methods and instruments;
- For the parameters which could change in such a way as to increase HAP emissions, you must provide a discussion identifying the frequency and methods for recalibrating the instruments you could use to monitor them; and
- You must provide a discussion of why, from your point of view, it is infeasible or unreasonable to adopt the parameters as operating limitations.

#### 4.4.3 Continuous Parameter Monitoring System Requirements

If you have petitioned the Administrator for operating limitations, for each stationary RICE you are required to install a continuous parameter monitoring system (CPMS) to continuously monitor your approved operating parameters. For each CPMS, you are required to follow certain operation and maintenance requirements; prepare a quality control program; and conduct performance evaluations.

##### 4.4.3.1 Operation and maintenance requirements for CPMS

There are several operation and maintenance requirements for operation of your CPMS [§63.8(c)]:

- You must operate the CPMS at all times, including during periods of startup, shutdown, or malfunction;
- You must have the necessary parts for routine repairs of the CPMS readily available;
- You must develop a written startup, shutdown, and malfunction (SSM) plan for CPMS (see section 4.5 of this document for specific SSM plan requirements);
- The read-out (i.e., visual display or record), or some indication of operation, from your CPMS must be readily accessible for control or inspection by the equipment operator;
- You must install and have the CPMS operational and have the data verified before or at the time of the initial performance test (you verify the operational status of your CPMS by, at a minimum, completing the manufacturer's written specifications or recommendations for installation, operation and calibration of the system);
- You must operate the CPMS continuously except for system breakdowns, out-of-control periods, repairs, maintenance periods, calibration checks, and zero (low-level) and high-level calibration drift adjustments;
- You must calibrate the CPMS prior to use;
- You must check each CPMS daily for indication that the system is responding;
- If the CPMS has an internal system check, you must record and check the results on a daily basis for proper operation;

- If you have a CPMS that is out of control,<sup>57</sup> you are required to take the necessary corrective action and repeat all necessary tests which indicate that the system is out of control. You also are required to take corrective actions and conduct retesting until the performance requirements are below the applicable limits. You may not use data recorded during periods that the CPMS is out of control in data averages or calculations.
- If you have a CPMS that is out of control,<sup>58</sup> you have to submit all information concerning out-of-control periods, including start and end dates, hours, and descriptions of your corrective actions in the semiannual compliance report (see section 4.7 of this document for more details on this report).

#### 4.4.3.2 Quality Control Program

You are required to develop and implement a quality control program for your CPMS [§63.8(d)]. The program must contain a written protocol that describes the procedures for the following operations:

- Initial and any subsequent calibration of the CPMS;
- Determination and adjustment of the calibration drift of the CPMS;
- Preventive maintenance of the CPMS, including spare parts inventory;
- Data recording, calculations, and reporting;
- Accuracy audit procedures, including sampling and analysis methods; and
- Program of corrective action for a malfunctioning CPMS.

You are required to maintain these written procedures on record for the life of the stationary RICE or until your stationary RICE is no longer subject to the RICE MACT. If appropriate, you may incorporate these written procedures as part of your SSM plan to avoid duplicating planning and recordkeeping efforts.

#### 4.4.3.3 Performance Evaluation

You are required to conduct a performance evaluation for each CPMS [§63.8(e)]. You must conduct the performance evaluation on your CPMS during the initial performance test required under the RICE MACT. You are required to notify the Administrator in

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<sup>57</sup> Your CPMS is considered out of control if: (1) the zero (low-level), mid-level (if applicable), or high-level calibration drift (CD) exceeds two times the applicable CD specification in the performance standard; or (2) the CPMS fails a performance test audit (e.g., cylinder gas audit), relative accuracy audit, relative accuracy test audit, or linearity test audit. The beginning of the out-of-control period is the hour you conduct a performance check (e.g., CD) that indicates an exceedance of the established performance requirements. The end of the out-of-control period is the hour following the completion of the corrective action and successful demonstration that the system is within the allowable limits.

<sup>58</sup> Your CPMS is considered out of control if: (1) the zero (low-level), mid-level (if applicable), or high-level calibration drift (CD) exceeds two times the applicable CD specification in the performance standard; or (2) the CPMS fails a performance test audit (e.g., cylinder gas audit), relative accuracy audit, relative accuracy test audit, or linearity test audit. The beginning of the out-of-control period is the hour you conduct a performance check (e.g., CD) that indicates an exceedance of the established performance requirements. The end of the out-of-control period is the hour following the completion of the corrective action and successful demonstration that the system is within the allowable limits.

writing of the date that you are going to conduct your performance evaluation at the same time you submit the notification to conduct your performance test. If you are not conducting a performance test, the performance evaluation notification must be submitted at least 60 days prior to the date that you are scheduled to begin the performance evaluation.

Before conducting the performance evaluation, you may be required to develop and submit a site-specific performance evaluation test plan to the Administrator for approval. The following elements must be included in the test plan:

- the evaluation program objectives;
- an evaluation program summary;
- the performance evaluation schedule;
- data quality objectives (the pre-evaluation expectations of precision, accuracy, and completeness of data);
- an internal QA program, which must include, at a minimum, the activities planned by routine operators and analysts to provide an assessment of CMS performance; and
- an external QA program which must include, at a minimum, systems audits that include the opportunity for on-site evaluation by the Administrator of instrument calibration, data validation, sample logging, and documentation of quality control data and field maintenance activities.

If the Administrator requests that you submit a site-specific performance evaluation test plan for approval, it is due at least 60 days before the performance test or performance evaluation is scheduled to begin, or on a mutually agreed upon date. The Administrator will review and approve the performance evaluation test plan at the same time as the review and approval of the site-specific test plan (if review of the site-specific test plan is requested). The Administrator may request additional relevant information after the submittal of a site-specific performance evaluation test plan.

If the Administrator fails to approve or disapprove the site-specific performance evaluation test plan within the 30 calendar days after receipt of the test plan, the following conditions apply:

- If you intend to demonstrate compliance using the monitoring method(s) specified in the RICE MACT, you are required to conduct the performance evaluation at the same time as the performance test using the specified method(s);
- If you intend to demonstrate compliance by using an alternative monitoring method, you must not conduct the performance evaluation until the Administrator approves the use of the alternative method. If the Administrator does not approve the alternative method within 30 days before the performance evaluation is scheduled to begin, the performance evaluation deadlines may be extended such that you must conduct the performance evaluation within 60 calendar days after the Administrator approves the use of the alternative method. You may proceed to conduct the performance evaluation (without the Administrator's prior approval of the site-specific performance evaluation test plan) if you subsequently chooses to use the specified monitoring method(s) instead of an alternative.

#### 4.4.4 Requirements for Approved Operating Limits

You are required to install and operate a CPMS to measure your approved operating limit [Table 5, items 5 and 7]. You must collect the parameter data you approved by the Administrator and reduce these data to 4-hour rolling averages [Table 6, items 5 and 8].<sup>59</sup> You are meeting the approved operating limit if the 4-hour rolling average parameter data is within your approved operating limitations for the operating parameters established during the initial performance test.

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<sup>59</sup> To calculate a rolling average, each hour you calculate the average NSCR inlet temperature for the current hour and the previous three hours.

#### **4.5 What are the Startup, Shutdown, and Malfunction (SSM) Requirements?**

You are required to operate your NSCR or other control device as well as any CPMS at all times, including periods of startup, shutdown, and malfunction (SSM), in a safe manner and according to good air pollution control practices to minimize emissions.

A startup is defined as “the setting in operation of an affected source or portion of an affected source for any purpose.” [§63.2]

A shutdown is defined as “the cessation of operation of an affected source or portion of an affected source for any purpose.” [§63.2]

A malfunction is defined as “any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.” [§63.2]

##### **4.5.1 What are my requirements during SSM events?**

You are responsible for reducing emissions to the greatest extent possible and maintain safety and good air control practices whenever there is a period of SSM. This does not mean that you are required to achieve the emission levels required under the RICE MACT during SSM events if it means that you would not be operating in a safe manner and with good air pollution practices nor are you required to make any further efforts to reduce emissions if you are meeting the emission levels required by the RICE MACT.

##### **4.5.2 Startup, Shutdown and Malfunction Plan**

You are required to develop and implement a written startup, shutdown, and malfunction (SSM) plan that describes, in detail, procedures for operating and maintaining the each stationary RICE during periods of SSM, and a program of corrective action for malfunctioning process and air pollution control and monitoring equipment (i.e., NSCR or other control device, pressure drop monitoring equipment, and CPMS). You must develop the SSM plan by December 13, 2007 for all of your existing stationary RICE. You must develop this plan by August 16, 2004 if construction or reconstruction of your new or reconstructed stationary RICE commenced on or after December 19, 2002 but before August 16, 2004. If construction or reconstruction of your new or reconstructed stationary RICE began after August 16, 2004, you must have your SSM plan developed by startup [§63.6(e)(3)(i)].

During periods of SSM, you must operate and maintain your stationary RICE (including each NSCR or other control device and monitoring equipment) in accordance with the procedures specified in your SSM plan [§63.6(e)(3)(ii)].

#### 4.5.2.1 What must be included in my SSM plan?

EPA does not specify the required elements of a SSM plan, but the SSM plan must address the following [§63.6(e)(3)(i)(A) through (C)]:

1. Ensure that, at all times, you operate and maintain each stationary RICE, including your NSCR or other control device and monitoring equipment, in a manner which satisfies your general duty to minimize emissions;
2. Ensure that you are prepared to correct malfunctions as soon as practicable after their occurrence in order to minimize excess emissions of hazardous air pollutants; and
3. Reduce the reporting burden associated with periods of startup, shutdown, and malfunction (including corrective action taken to restore malfunctioning process and air pollution control equipment to its normal or usual manner of operation).

To develop your SSM plan, you may use your standard operating procedures (SOP) manual, or an Occupational Safety and Health Administration (OSHA) or other plan, provided the alternative plans meet the SSM plan requirements and are made available for inspection or submitted when requested by EPA or the delegated authority [§63.6(e)(3)(vi)].

#### 4.5.2.2 When may the SSM plan be revised?

You may periodically revise the SSM plan for your stationary RICE as necessary to satisfy the requirements of 40 CFR part 63 or to reflect changes in equipment or procedures at the affected source. Unless EPA or your permitting authority provides otherwise, you may make such revisions to the startup, shutdown, and malfunction plan without prior approval by EPA or the permitting authority [§63.6(e)(3)(viii)]. However, each revision to a SSM plan must be reported in the semiannual compliance report (see section 4.7.5).

If the SSM plan fails to address or inadequately addresses an event that meets the characteristics of a malfunction but was not included in the SSM plan at the time you developed the plan, you must revise the SSM plan within 45 days after the event to include detailed procedures for operating and maintaining the source during similar malfunction events and a program of corrective action for similar malfunctions of process or air pollution control and monitoring equipment [§63.6(e)(3)(viii)].

In the event that you make any revision to the SSM plan which alters the scope of the activities which are deemed to be an SSM, or otherwise modify the applicability of any emission limit or other RICE MACT requirement, the revised plan may not take effect until after you have provided a written notice describing the revision to your permitting authority [§63.6(e)(3)(viii)].

If EPA or the delegated authority determines that you are not operating and maintaining your stationary RICE (including the NSCR or other control device and monitoring equipment) in such a way that is consistent with safety and good air pollution control

practices [§63.6(e)(1)(i)], EPA or the delegated authority may require you to make changes to the SSM plan for that stationary RICE. EPA or the delegated authority must require appropriate revisions to a SSM plan, if EPA or the delegated authority finds that the plan [§63.6(e)(3)(vii)]:

- Does not address a SSM event that has occurred;
- Fails to provide for the operation of the stationary RICE (including the NSCR or other control device and monitoring equipment) during a SSM event in a manner consistent with the general duty to minimize emissions established by §63.6(e)(1)(i);
- Does not provide adequate procedures for correcting malfunctioning process and/or air pollution control and monitoring equipment as quickly as practicable; or
- Includes an event that does not meet the definition of startup, shutdown, or malfunction listed in §63.2.

The title V permit for a stationary RICE must require that you adopt a SSM plan which conforms to part 63, and that you operate and maintain the stationary in accordance with the procedures specified in the current SSM plan. However, any revisions made to the SSM plan as specified above do not constitute permit revisions under part 70 or part 71 of this chapter. Moreover, none of the procedures specified by the SSM plan for an affected source shall be deemed to fall within the permit shield provision in section 504(f) of the Act [§63.6(e)(3)(ix)].

#### 4.5.2.3 What are my requirements for maintaining my SSM plan?

You must maintain a current SSM plan and must make the plan available upon request for inspection and copying by the EPA or delegated authority. In addition, if you subsequently revise your SSM plan (see section 4.5.2.2), you must keep each previous (i.e., superseded) version of the SSM plan, and must make each such previous version available for inspection and copying by the EPA or the delegated authority for 5 years after revision of the plan. If at any time after adoption of an SSM plan the stationary RICE ceases operation or is otherwise no longer subject to the RICE MACT, you must keep a copy of the most recent plan for 5 years from the date the stationary RICE ceases operation or is no longer subject the RICE MACT and must make the plan available upon request for inspection and copying by EPA or the delegated authority [§63.6(e)(3)(v)].

EPA or the delegated authority may at any time request in writing that you submit a copy of any SSM plan (or a portion thereof). Upon receipt of such a request, you must promptly submit a copy of the requested plan (or a portion thereof) to EPA or the delegated authority. EPA or the delegated authority must request that you submit a particular SSM plan (or a portion thereof) whenever a member of the public submits a specific and reasonable request to examine or to receive a copy of that plan or portion of a plan. You may elect to submit the required copy of any SSM plan in an electronic format. If you claim that any portion of such a SSM plan is confidential business information entitled to protection from disclosure under section 114(c) of the Act or 40

CFR 2.301, the material which is claimed as confidential must be clearly designated in the submission. [§63.6(e)(3)(v)]

#### 4.5.3 How do I demonstrate I am following my SSM plan?

When you take actions during a period of SSM (including actions taken to correct a malfunction) that are consistent with the procedures specified in the SSM plan developed for your stationary RICE, you must do the following [§63.6(e)(iii)]:

- You must keep records for that event which demonstrate that the procedures specified in the plan were followed. These records may take the form of a “checklist,” or other form of recordkeeping that confirms that you followed the procedures defined in your SSM plan for that event.
- You must keep the following records of these events [§63.10(b)(2)]:
  - Records of the occurrence and duration of each startup, shutdown, or malfunction of operation
  - Records of the occurrence and duration of each malfunction of the NSCR or other control device and monitoring equipment
- You must confirm that actions taken during the relevant reporting period during periods of SSM were consistent with the startup, shutdown and malfunction plan developed for each stationary RICE in the semiannual (or more frequent) startup, shutdown, and malfunction report required in §63.10(d)(5). Note that this information may also be incorporated into your semiannual compliance report (see section 4.7.5).

If you take an action during a startup, shutdown, or malfunction (including an action taken to correct a malfunction) that is not consistent with the procedures specified in your stationary RICE's startup, shutdown, and malfunction plan, and the stationary RICE exceeds the applicable emission limitation, then you must record the actions taken for that event and must report such actions within 2 working days after commencing actions inconsistent with the plan, followed by a letter within 7 working days after the end of the event, in accordance with §63.10(d)(5) (unless the owner or operator makes alternative reporting arrangements, in advance, with the Administrator) [§63.6(e)(3)(iv)].

## **4.6 What Records Must I Keep?**

You are required to keep records of activities required to meet the final RICE MACT. You must keep files of all information (including reports and notifications) required under the RICE MACT in a format suitable and readily available for “expeditious inspection and review [§63.6660(a)].” You must maintain these records for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record [§63.6660(b)]. Records may be kept in hard copy or electronic form. You may retain at least 2 years of records on-site. You can keep records off-site for the remaining 3 years [§63.6660(c)].

### **4.6.1 Recordkeeping Requirements for Notifications and Reports**

You are required to keep a copy of each notification and report that you have submitted as a part of complying with the RICE MACT, including all documentation supporting any notification or report [§63.6655(a)(1)]. You must maintain records of the following notifications and reports (see section 4.7 of this document for details regarding these notifications and reports):

- Initial Notification;
- Notifications of performance tests;
- Site-specific test plan;
- Notification of performance evaluation for CPMS;
- Site-specific performance evaluation plan;
- Any request to use an alternative monitoring procedure;
- Any request for extension of compliance;
- Notification that your source is subject to special compliance requirements;
- Notification of compliance status, including performance test results and written report to document engine load conditions during the test;
- Semiannual compliance reports; and
- Startup, shutdown, and malfunction reports.

### **4.6.2 Recordkeeping Requirements for Startup, Shutdown, and Malfunction Events**

You are required to keep records related to startup, shutdown and malfunction (SSM) events as follows (see section 4.5 for details on SSM events) [§§63.6655(a)(2) and 63.6(e)(3)(iii) through (v)]:

- When you take actions during an SSM event (including actions taken to correct a malfunction), that are consistent with the procedures specified your SSM plan, you must keep records which demonstrate that the procedures specified in the plan were followed. You may keep records in the form of a “checklist,” or you may choose another form of recordkeeping that documents that you have followed your SSM plan for that event.
- You must keep records of these SSM events, including records of the occurrence and duration of each startup, shutdown, or malfunction of operation and each malfunction of the air pollution control and monitoring equipment.

- When you take actions during an SSM event that are not consistent with the procedures specified in the your SSM plan, and the stationary RICE exceeds the formaldehyde emission limitations, then you must record the actions taken for that event.
- You must maintain a current SSM plan and must make the plan available upon request for inspection and copying by the Administrator. If you make revisions to your SSM plan, you are required to keep a copy of each previous (i.e., superseded) version of the SSM plan for 5 years after each revision. Previous versions must be available for inspection and copying by the Administrator.
- If at any time after adoption of a SSM plan stationary RICE ceases operation or is otherwise no longer subject to the RICE MACT, you must retain a copy of the most recent plan for 5 years from the date the stationary RICE ceases operation or is no longer subject to the RICE MACT. This plan must be available upon request for inspection and copying by the Administrator.
- The Administrator may request in writing that you submit a copy of any SSM plan (or portion of the plan). Upon receipt of such a request, you must promptly submit a copy of the requested plan (or portion of the plan) to the Administrator. The Administrator is required to request that you submit a particular SSM plan (or a portion thereof) whenever a member of the public submits a specific and reasonable request to examine or to receive a copy of that plan or portion of a plan. You may elect to submit the required copy of any SSM plan to the Administrator in an electronic format. If you claim that any portion of such a SSM plan is confidential business information entitled to protection from disclosure under section 114(c) of the Act or 40 CFR 2.301, the material which is claimed as confidential must be clearly designated in the submission.

#### 4.6.3 Recordkeeping Requirements for Performance Tests and CPMS

You are required to keep records of all performance test results. Performance test results may include analysis of samples, determination of emissions, and raw data [§§63.6655(b) and 63.10(b)(2)(viii)].

For each CPMS, you are required to keep the following records [§§6655(b) and 63.10(b)(2)(vi) through (xi)]:

- All CPMS performance evaluations;
- Records of each period during which the CPMS is malfunctioning or inoperative (including periods where the CPMS is out of control);
- All required measurements needed to demonstrate compliance with the operating limitations (including, but not limited to, 15-minute averages of CPMS data, raw performance testing measurements, and raw performance evaluation measurements, that support data that you are required to report);
- All measurements as may be necessary to determine the conditions of performance tests and performance evaluations;
- All CPMS calibration checks;
- All adjustments and maintenance performed on CPMS;

- You must maintain a current performance evaluation test plan and quality control procedures and must make these written procedures available upon request for inspection and copying by the Administrator. If you make revisions to your performance evaluation plan, you are required to keep a copy of each previous (i.e., superseded) version of the plan for 5 years after each revision [§63.8(d)(3)]. Previous versions must be available for inspection and copying by the Administrator. If it is relevant, you may incorporate these procedures as part of your SSM plan.

You are also required to keep records of the following [§63.10(c)(1) through (14)]:

- All required CPMS measurements (including monitoring data recorded during unavoidable CPMS breakdowns and out-of-control periods);
- The date and time identifying each period during which the CPMS was inoperative except for zero (low-level) and high-level checks;
- The date and time identifying each period during which the CPMS was out of control;
- The specific identification (i.e., date and time of commencement and completion) of each period of excess emissions and parameter monitoring exceedances that occurs during startups, shutdowns, and malfunctions;
- The specific identification (i.e., date and time of commencement and completion) of each period of excess emissions and parameter monitoring exceedances that occurs during periods other than startups, shutdowns, and malfunctions;
- The nature and cause (if known) of any malfunction;<sup>60</sup>
- The corrective action taken or preventative measures adopted;<sup>61</sup>
- The nature of the repairs or adjustments to the CMS that was inoperative or out of control;<sup>62</sup>
- The total process operating time during the reporting period; and
- All procedures that are a part of a quality control program and implemented for CPMS under §63.8(d).

#### 4.6.4 Recordkeeping Requirements for Monitoring Data

You are required to keep records of all monitoring data you collect to demonstrate compliance with your operating limitations [Table 6, items 4, 5, 7, and 8].

If you are using NSCR you must keep records of the catalyst inlet temperature data measured by your CPMS and the monthly pressure drop measurements. If you are not using NSCR, you are required to keep records of the approved operating parameter.

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<sup>60</sup> This item may be incorporated into your startup, shutdown, or malfunction plan and records that you are keeping as a part of your SSM plan.

<sup>61</sup> This item may be incorporated into your startup, shutdown, or malfunction plan and records that you are keeping as a part of your SSM plan.

<sup>62</sup> This item may be incorporated into your startup, shutdown, or malfunction plan and records that you are keeping as a part of your SSM plan.

## **4.7 What Notifications and Reports Must I Submit?**

For each notification and report, you send a copy to both your State Air Pollution Control Office and your EPA Regional Office. Appendix B contains a list of Regional EPA offices and addresses.

### **4.7.1 Initial Notification**

The initial notification states that your affected source is subject to the RICE standards. If you have an existing 4SRB engine, or a new or reconstructed stationary RICE that you startup before August 16, 2004 you are required to submit the initial notification not later than December 13, 2004 [§63.6645(b)].

If you startup your new or reconstructed stationary RICE after on or after August 16, 2004, you are required to submit your initial notification within 120 days after your stationary RICE becomes subject to the RICE MACT [§63.6645(c)].

You are required to provide the following information in the initial notification [§63.9(b)(2)]:

1. The name and address of the owner or operator of your facility;
2. The address (i.e., physical location) of your facility;
3. An identification of the relevant standard (in this case, 40 CFR subpart ZZZZ), that is the basis of the notification and the your compliance date;
4. A brief description of the nature, size, design, and method of operation of the source and an identification of the types of emission points within the affected source subject to the relevant standard and types of HAP emitted; and
5. A statement of whether your facility is a major source or an area source.

Appendix C contains an example initial notification form.

### **4.7.2 Notification of Intent to Conduct a Performance Test**

If you are required to conduct performance tests, you must submit a notification of intent to conduct a performance test to identify the scheduled date for the performance test. The notification must be submitted 60 days prior to the test to both your State Air Pollution Control Office and your EPA Regional Office [§§63.6645(e) and 63.7(b)(1)].

### **4.7.3 Performance Test Report**

You must submit a performance test report within 60 days after completing the performance test [§63.7(g)]. The report must include an analysis of samples, determination of emissions, and the raw data. The initial performance test results may be submitted with the notification of compliance status.

#### 4.7.4 Notification of Compliance Status

You must submit the Notification of Compliance Status within 60 days following the completion of the performance test [§63.6645(f)(2)]. The Notification of Compliance Status certifies that your stationary RICE is meeting the emission limitations and operating limitations; identifies the option(s) you used to demonstrate initial compliance, summarizes the data and calculations supporting the compliance demonstration, and describes how you will determine continuous compliance.

The Notification of Compliance Status must be signed by a responsible official certifying its accuracy, attesting to whether all stationary RICE are complying with the RICE MACT. The Notification of Compliance Status must contain the following information [§63.9(h)(2)(i)]:

- The methods that were used to determine compliance;
- The results of any performance tests, CPMS performance evaluations, and/or other monitoring procedures or methods that were conducted;
- The methods that will be used for determining continuing compliance, including a description of monitoring and reporting requirements and test methods;
- The formaldehyde percent reduction (percent) or the formaldehyde concentration in ppbvd at 15% O<sub>2</sub>;
- A description of the NSCR or other air pollution control equipment (or method) for each stationary RICE; and
- A statement as to whether you have complied with the RICE MACT.

A written report of the average percent load determination must be included in the notification of compliance status. The following information must be included in the report:

- the engine model number;
- the engine manufacturer;
- the year of purchase;
- the manufacturer's site-rated brake horsepower;
- the ambient temperature, pressure, and humidity measured during the performance test; and
- all assumptions that were made to estimate or calculate percent load during the performance test must be clearly explained.

If measurement devices such as flow meters, kilowatt meters, beta analyzers, stain gauges, etc. are used, the model number of the measurement device, and an estimate of its accuracy in percentage of true value must be provided.

After you have been issued a title V operating permit, you must comply with all requirements for compliance status reports contained in your title V permit. After you have been issued a title V operating permit, you are required to submit the notification of compliance status to the appropriate permitting authority following completion of the compliance demonstrations specified in the RICE MACT.

#### 4.7.5 Semiannual Compliance Reports

You must submit semiannual compliance reports. The first compliance report covers the period beginning on the compliance date for your stationary RICE and ends on June 30 or December 31, whichever is the first date following the end of the first calendar half after the compliance date [§63.6650(b)(1)]. The first compliance report is due on either July 31 or January 31, whichever date follows the end of the first calendar half after the compliance date [§63.6650(b)(2)]. Subsequent reports cover the reporting periods from January 1 through June 30 or July 1 through December 31 [§63.6650(b)(3)]. Each subsequent report is due either on July 31 or January 31, whichever is the first date following the end of the semiannual reporting period [§63.6650(b)(4)].

Instead of the schedule just discussed, you may submit the first and subsequent compliance reports on the dates established by your permitting authority under title V operating permit regulations. Your facility must be subject to title V operating permit regulations under 40 CFR part 70 or 71, and your permitting authority must have established dates for submitting semiannual reports [§63.6650(b)(5)].

The semiannual compliance report must contain the following information [§63.6650(c), (d), and (e)]:

- Company name and address.
- Statement by a responsible official, with that official's name, title, and signature, certifying the accuracy of the content of the report.
- Date of report and beginning and ending dates of the reporting period.
- If applicable, a statement that you had a startup, shutdown, or malfunction during the reporting period, and actions taken during the SSM event were consistent with your SSM plan.
- If applicable, the number, duration and a description of any instance where you had a startup, shutdown, or malfunction during the reporting period, and actions taken during the SSM event were not consistent with your SSM plan but you did not exceed your formaldehyde emission limits. Also include the number, duration, and a description of each type of malfunction that occurred during the reporting period and which caused or may have caused you to exceed your formaldehyde emission limits.
- If you revised your SSM plan during the reporting period, you must include the revision.
- If there are no deviations from any emission or operating limitations that apply to you, a statement that there were no deviations from the emission or operating limitations during the reporting period.
- If there were no periods during which the CPMS was out-of-control, a statement that there were no periods during which the CPMS was out-of-control during the reporting period.
- A statement that during the reporting period there were no deviations from the emission limitations or operating limitations.

- You must report each time you did not meet your emission limitation or operating limitation that apply to each stationary RICE. These instances are deviations from the emission and operating limitations.
- For each deviation from an emission limitation or operating limitation for a stationary RICE where you are not using a CMS to comply with the emission or operating limitations, you must include: (1) The total operating time of the stationary RICE at which the deviation occurred during the reporting period and (2) Information on the number, duration, and cause of deviations (including unknown cause, if applicable), as applicable, and the corrective action taken.
- For each deviation from an emission limitation or operating limitation for a stationary RICE where you are using a CMS to comply with the emission or operating limitations, you must include:
  - The date and time that each malfunction started and stopped
  - The date, time, and duration that each CMS was inoperative, except for zero (low-level) and high-level checks.
  - The date, time, and duration that each CMS was out-of-control, including start and end dates and hours and descriptions of corrective actions taken.
  - The date and time that each deviation started and stopped, and whether each deviation occurred during a period of malfunction or during another period.
  - A summary of the total duration of the deviation during the reporting period, and the total duration as a percent of the total source operating time during that reporting period.
  - A breakdown of the total duration of the deviations during the reporting period into those that are due to control equipment problems, process problems, other known causes, and other unknown causes.
  - A summary of the total duration of CMS downtime during the reporting period, and the total duration of CMS downtime as a percent of the total operating time of the stationary RICE at which the CMS downtime occurred during that reporting period.
  - An identification of each parameter and pollutant (formaldehyde) that was monitored at the stationary RICE.
  - A brief description of the stationary RICE.
  - A brief description of the CMS.
  - The date of the latest CMS certification or audit.
  - A description of any changes in CMS, processes, or controls since the last reporting period.

#### 4.7.6 Immediate Startup, Shutdown, or Malfunction Reports

A startup, shutdown, and malfunction report must be submitted immediately if any action taken during a startup, shutdown, or malfunction during the reporting period are not consistent with your SSM plan [Table 7]. You must report actions by phone or by fax within 2 days after starting actions inconsistent with the SSM plan, followed by letter within 7 days. The letter must include the name, title, and signature of the responsible official who is certifying its accuracy, an explanation of the circumstances of the event,

the reasons for not following the SSM plan, and a description of all excess emissions and/or parameter monitoring exceedances which are believed to have occurred [§63.10(d)(5)].



## **5.0 What are the MACT Requirements for 2-Stroke Lean Burn Engines?**

The purpose of this section is to provide a detailed summary of the MACT requirements for 2-Stroke Lean Burn (2SLB) stationary RICE. Existing 2SLB stationary RICE do not have to meet any requirements under subpart ZZZZ. For each new or reconstructed 2SLB stationary RICE subject to Subpart ZZZZ, you have to comply with the full MACT requirements, including emission limitations, operating limitations, and requirements for performance tests, monitoring, recordkeeping and reporting. The following sections provide a detailed summary of these requirements.

1. What are the Emission Limitations?
2. What are the Emission Testing Requirements?
3. What are the Operating Limits and Parameter Monitoring Requirements If I Am Using an Oxidation Catalyst?
4. What are the Operating Limits and Parameter Monitoring Requirements If I Am Not Using an Oxidation Catalyst?
5. What are the Monitoring Requirements If I am using a CEMS?
6. What are the Startup, Shutdown, and Malfunction Requirements?
7. What Records Must I Keep?
8. What Notification and Reports Must I Submit?

If you do not have a new or reconstructed 2SLB stationary RICE, you may skip this section.

## 5.1 What Are The Emission Limitations?

For each new or reconstructed spark ignition 2SLB stationary RICE subject to Subpart ZZZZ, you must comply with ONE of the following emission limitations at 100 percent load plus or minus 10 percent [Table 2a]:

- Reduce carbon monoxide (CO) emissions by 58 percent or more (referred to as the CO percent reduction limit); OR
- Limit the formaldehyde concentration in the stationary RICE exhaust to 12 parts per million, by volume on a dry basis (ppmvd) at 15 percent O<sub>2</sub> (referred to as the formaldehyde concentration limit).

If you have a new or reconstructed 2SLB stationary RICE that commenced construction or reconstruction between December 19, 2002 and June 15, 2004, you may choose to limit your formaldehyde emissions by to 17 ppmvd or less June 15, 2007 [Table 2a]. After June 15, 2007, you must comply with ONE of the final emission limitations listed above. This provision is included because the final formaldehyde concentration limit (12 ppmvd) is more stringent than the proposed limit (17 ppmvd).

You may meet the applicable emission limitation by using an oxidation catalyst or an alternative method of control. Whichever method of control you choose, you will have emission testing requirements; operating limits and parameter monitoring requirements; startup, shutdown, and malfunction requirements; recordkeeping requirements; and notification and reporting requirements. You will have different operating limitations and monitoring requirements depending on the method of control you choose. Refer to the summary of operating parameter and monitoring requirements under section 5.3 if you are using an oxidation catalyst and section 5.4 if you are using an alternative method of control.

## 5.2 What Are The Emission Testing Requirements?

You must conduct emission testing on new and reconstructed 2SLB engines subject to Subpart ZZZZ to show that you are meeting ONE of the applicable emission limitations (as discussed in Section 5.1). For MACT, emission tests are called “performance tests.” The following performance tests are required for Subpart ZZZZ:

- You must conduct an initial performance test for new and reconstructed 2SLB engines subject to Subpart ZZZZ (see section 5.2.2).
- You must conduct semiannual performance tests if your 2SLB stationary RICE is not equipped with a continuous emission monitor (CEM) AND you are complying with the CO percent reduction limit, or if you are complying with the formaldehyde concentration limit (see section 5.2.3).
- If you are using an oxidation catalyst, to comply with Subpart ZZZZ, you also must conduct a performance test if you change your catalyst (see section 5.2.4).

In all cases, the emission tests must be conducted according to the requirements included in Subpart ZZZZ, discussed below (see Section 5.2.1).

If you elect to install a CEMS to continuously monitor CO and either oxygen or CO<sub>2</sub>, to demonstrate compliance with the CO percent reduction limitation, you are required to conduct an initial performance evaluation and relative accuracy test audit (RATA). You are not required to conduct the performance tests specified in Table 4. Specific requirements for CEMS are presented in section 5.5.

### 5.2.1 How do I conduct my performance tests?

The following provisions apply to all performance tests:

- You must conduct the tests using the test methods and other test procedures included in Table 4 of Subpart ZZZZ. These provisions are discussed further in Sections 5.2.1.1 and 5.2.1.2 below.
- The tests must be conducted while the engine is operating at 100 percent load plus or minus 10 percent. [63.6620(b)]
- The tests must NOT be conducted during startup, shutdown, or malfunction (SSM) events (see section 5.6 of this document for details on SSM requirements) [§§63.6620(c) and 63.7(e)(1)].
- The tests must include at least three separate test runs, and each test run must last at least one hour [63.6620(d)].
- Operating parameters must be measured during the performance test (see section 5.2.2.1 for operating parameters)
- Determination of engine load must be documented, including the calculations, assumptions, and measurement devices used to measure or estimate the percent load. This information must be submitted in a written report with the performance test results (see section 5.8.4 of this document for the information that must be included in this report).

- You must record ambient temperature, pressure, and humidity for the percent load determination and include the data in a written report (see section 5.8.4 of this document for the information that must be included in this report).

#### 5.2.1.1 What performance test requirements do I have to follow if I am complying with the CO percent reduction limitation?

If you are complying with the CO percent reduction limit, you must conduct all of your performance tests using the following criteria [Table 4, item 1].

1. You must measure the O<sub>2</sub> at the inlet and outlet of the oxidation catalyst or other control device with a portable CO and O<sub>2</sub> analyzer, using ASTM D6522-00<sup>63</sup> (incorporated by reference, according to §63.14). You must make measurements to determine O<sub>2</sub> at the same time as the measurements for CO concentration.
2. You must measure the CO at the inlet and outlet of the oxidation catalyst or other control device with a portable CO and O<sub>2</sub> analyzer, using ASTM D6522-00<sup>64</sup> (incorporated by reference, according to §63.14). The CO concentration must be at 15% O<sub>2</sub>, dry basis

Determine compliance with the CO percent reduction requirement using the following set of equations [§63.6620(e)]:

$$R = \frac{C_i - C_o}{C_i} \times 100$$

Where:

- C<sub>i</sub> = concentration of CO at the oxidation catalyst or other control device inlet,  
 C<sub>o</sub> = concentration of CO at the oxidation catalyst or other control device outlet,  
 R = percent reduction of CO emissions.

You are required to normalize the CO concentration at the inlet and outlet of the oxidation catalyst or other control device to 15% O<sub>2</sub> and a dry basis, or an equivalent percent CO<sub>2</sub>. Use a CO<sub>2</sub> correction factor if CO<sub>2</sub> concentration is measured as an exhaust diluent in lieu of measuring O<sub>2</sub> concentration.

#### ***CO<sub>2</sub> correction factor:***

Step 1: Calculate the fuel-specific F<sub>o</sub> value for the fuel burned during the test.

<sup>63</sup> You may also use Methods 3A and 10 as options to ASTM–D6522–00. You may obtain a copy of ASTM–D6522–00 from at least one of the following addresses: American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428–2959, or University Microfilms International, 300 North Zeeb Road, Ann Arbor, MI 48106.

<sup>64</sup> You may also use Methods 3A and 10 as options to ASTM–D6522–00. You may obtain a copy of ASTM–D6522–00 from at least one of the following addresses: American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428–2959, or University Microfilms International, 300 North Zeeb Road, Ann Arbor, MI 48106.

$$F_o = \frac{0.209 F_d}{F_c}$$

Where:

- $F_o$  = Fuel factor based on the ratio of oxygen volume to the ultimate  $\text{CO}_2$  volume produced by the fuel at zero percent excess air.  
 $0.209$  = Fraction of air that is oxygen, percent/100.  
 $F_d$  = Ratio of the volume of dry effluent gas to the gross calorific value of the fuel from Method 19, dsm<sup>3</sup>/J (dscf/106 Btu).  
 $F_c$  = Ratio of the volume of  $\text{CO}_2$  produced to the gross calorific value of the fuel from Method 19, dsm<sup>3</sup>/J (dscf/106 Btu).

Step 2: Calculate the  $\text{CO}_2$  correction factor for correcting measurement data to 15 percent oxygen.

$$X_{\text{CO}_2} = \frac{5.9}{F_o}$$

Where:

- $X_{\text{CO}_2}$  =  $\text{CO}_2$  correction factor, percent.  
 $5.9$  =  $20.9$  percent  $\text{O}_2$  -  $15$  percent  $\text{O}_2$ , the defined  $\text{O}_2$  correction value, percent.

Step 3: Calculate the  $\text{NO}_x$  and  $\text{SO}_2$  gas concentrations adjusted to 15 percent  $\text{O}_2$  using  $\text{CO}_2$  as follows:

$$C_{\text{adj}} = C_d \frac{X_{\text{CO}_2}}{\% \text{CO}_2}$$

Where:

- $\% \text{CO}_2$  = Measured  $\text{CO}_2$  concentration measured, dry basis, percent.

#### 5.2.1.2 What performance test requirements do I have to follow if I am complying with the formaldehyde concentration limitation?

If you are complying with the requirement to limit the formaldehyde concentration you must conduct your initial and all subsequent performance tests using the following criteria [Table 4, item 3]:

1. You must select the location of the sampling port and the number of traverse points using Method 1 or 1A (40 CFR part 60, appendix A). You must choose a sampling site that is located at the outlet of the oxidation catalyst or other control device; AND
2. You must determine the  $\text{O}_2$  concentration of the 2SLB stationary RICE exhaust at the sampling port location using Method 3, 3A or 3B (40 CFR part 60, appendix A). You must take the measurements to determine the  $\text{O}_2$  concentration

at the same time and location as the measurements for the formaldehyde concentration; AND

3. You must measure the moisture content of the 2SLB stationary RICE exhaust at the sampling port location using Method 4 (40 CFR part 60, appendix A) or Method 320 (40 CFR part 63, appendix A) or ASTM D 6348-03. You must take measurements to determine the moisture content at the same time and location as the measurements for the formaldehyde concentration; AND
4. You must measure formaldehyde at the exhaust of the 2SLB stationary RICE using Method 320 or 323 (40 CFR part 60, appendix A), or ASTM D6348-03,<sup>65</sup> provided in ASTM D6348-03 Annex A5 (Analyte Spiking Technique), the percent R must be  $\geq 70$  and  $\leq 130$ . You must convert the formaldehyde concentration to 15% O<sub>2</sub>, dry basis. Results of this test consist of the average of the three 1-hr or longer runs.

### 5.2.2 Initial Performance Test

You must conduct an initial performance test for new or reconstructed 2SLB engines subject to Subpart ZZZZ to show that you are meeting either the CO percent reduction limit or the formaldehyde concentration limit. The initial performance test must be conducted using the methods and test procedures presented in Section 5.2.1.

The results of the initial performance test must show that you have reduced CO emissions by 58 percent or more or the formaldehyde concentration in your stationary RICE exhaust is less than or equal to 12 ppmvd at 15 percent O<sub>2</sub> [§63.6630(a)].

If you have a new or reconstructed 2SLB stationary RICE that commenced construction or reconstruction between December 19, 2002 and June 15, 2004, you may choose to demonstrate compliance with the optional emission limitation of less than or equal to 17 ppmvd at 15 percent O<sub>2</sub> during the initial performance test. In that case, you must conduct an additional performance test by December 13, 2007 to demonstrate compliance with ONE of the final emission limitations included in Subpart ZZZZ. [§63.6610(c)]

#### 5.2.2.1 Measuring Operating Parameters During the Initial Performance Test

If you use an oxidation catalyst to comply with MACT, and are NOT using a CEMS, you must record two operating parameters during the initial performance test (Table 5, items 1 and 6):

- pressure drop across the catalyst; and
- inlet temperature to the catalyst.

If you are not using an oxidation catalyst and EPA has approved your petition to establish operating limitations, you must record parameters during the initial performance test in accordance with EPA's approval of your petition to establish operating limitations (Table

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<sup>65</sup> You may obtain a copy of ASTM-D6348-03 from at least one of the following addresses: American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, or University Microfilms International, 300 North Zeeb Road, Ann Arbor, MI 48106.

5, items 2 and 7). These values will be used to establish your operating limits (see Sections 5.3 or 5.4 of this document). Note that you should not conduct the initial performance test until EPA acts on your petition [§63.6620(f)].

If you are not using an oxidation catalyst and EPA approved your petition EPA to establish NO operating limitations, you are not required to record parameters during the initial performance test. Note that you should not conduct the initial performance test until EPA acts on your petition [§63.6620(f)].

#### 5.2.2.2 When do I have to conduct the initial performance test?

If construction/reconstruction of the new or reconstructed 2SLB stationary RICE commences after June 15, 2004, you must conduct the initial compliance test within 180 days after you start up the new or reconstructed engine [§63.6610(a)].

If you have a new or reconstructed 2SLB stationary RICE that commenced construction (or reconstruction) between December 19, 2002 and June 15, 2004, you have to conduct the initial performance test no later than February 10, 2005 or no later than 180 days after startup of your engine, whichever date is later [§63.6610(b)].

For engines that opt to comply initially with 17 ppmvd formaldehyde concentration limit: If you have chosen to limit formaldehyde emissions to 17 ppmvd or less from the proposed rule [67 FR 77830, §63.6600(a)], you must conduct the initial performance test by the deadlines discussed above.

In addition, you must conduct a second performance test by December 13, 2007 to show that you are now complying with the 12 ppmvd formaldehyde concentration limitation from the final rule after June 15, 2007 [§63.6610(c)].

#### 5.2.2.3 When is an initial performance test not required?

You do not have to perform an initial performance test if you have conducted a performance test on your 2SLB stationary RICE that meets the following criteria:

1. The test was conducted using the same test methods specified in section 5.2.1.1 or 5.2.1.2 of this document, and you followed these methods correctly.
2. The test is not older than 2 years.
3. The test has been reviewed and accepted by EPA.
4. No process or equipment changes have been made since the test was performed, or you can demonstrate that the results of the performance test, with or without adjustments, reliably demonstrate compliance despite process or equipment changes.
5. The test was conducted at any load condition within  $\pm 10$  percent of 100 percent load.

You are also not required to conduct an initial performance test if you install a CEMS to continuously monitor CO and either O<sub>2</sub> or CO<sub>2</sub>. Instead, for each CEMS, you are

required to conduct an initial performance evaluation (see section 5.5 for more details regarding the performance evaluation). You are required to conduct the initial performance evaluation for each CEMS by February 12, 2005 or within 180 days after startup, whichever is later.

### 5.2.3 Semiannual Performance Tests

You must conduct semi-annual performance tests if:

- You are complying with the CO percent reduction limit AND your 2SLB stationary RICE is NOT equipped with a CEMS.
- You are complying with the formaldehyde concentration limit [§63.6615 and Table 3].

If you conduct two consecutive performance tests and are in compliance with the applicable emission limitation, you may conduct the subsequent performance tests on an annual basis. You must resume semi-annual tests if:

- Any subsequent performance test shows that you are not in compliance with your emission limit, or
- You deviate from any of your operating limitations [Table 3, footnote].

### 5.2.4 Other Required Tests

If you are using a catalyst, such as an oxidation catalyst, to comply with Subpart ZZZZ, and you change the catalyst, you are required to conduct a performance test to show that you are meeting the applicable emission limitation. You must also reestablish the values of the operating parameters measured during the initial performance test [§63.6640(b)]. If you are using an oxidation catalyst to comply with MACT, you must reestablish the initial pressure drop for the catalyst and measure the inlet temperature to the catalyst during the catalyst-change performance test.

### 5.2.5 Reports and Notification for Performance Tests

The reports and notifications required for performance tests are presented in the table below:

**Reports and Notifications for All Performance Tests**

<b>Performance Test Requirement</b>	<b>Deadline</b>
Notification of Intent to Conduct a Performance Test	60 days before test date
Site-Specific Test Plan & Submit to EPA or Delegated Authority if Submittal is Requested	60 days before test date or mutually agreed date
Contact EPA or Delegated Authority to Request Performance Audit Materials	30 days before test date

### **Reports and Notifications for All Performance Tests**

<b>Performance Test Requirement</b>	<b>Deadline</b>
Submit Results of Performance Test with Notification of Compliance Status Report	60 days after test completion (Completion = date field sample collection is completed) OR If using CEMS, 30 days after performance evaluation completion

These reports and notifications are discussed further in Sections 5.7 and 5.8.

### **5.3 What Are The Operating Limits And Parameter Monitoring Requirements If I Am Using An Oxidation Catalyst?**

In addition to meeting emission limitations, you may also have to meet certain operating limits. The operating limits for 2SLB engines are presented in Table 2b of Subpart ZZZZ. If you choose to install a CEMS, you do not have operating limits to comply with MACT. Section 5.5 presents your requirements if you choose to install a CEMS.

It is important to note that these operating limits are enforceable independent of the emission limits – they are not triggers to assess your emissions. Instead they are separate and enforceable limits.

This section presents the operating limit and parameter monitoring requirements if you are using an oxidation catalyst to meet the applicable CO or formaldehyde emission limit. If you are not using an oxidation catalyst, section 5.4 presents the operating limit and parameter monitoring requirements for other control technologies.

The operating limits and parameter monitoring requirements are the same for both the 58-percent CO percent reduction requirement and the 12-ppmvd formaldehyde concentration requirement.

#### **5.3.1 Operating Limits for 2SLB Engines using Oxidation Catalyst to Comply with MACT**

Two operating limits apply for 2SLB engines using oxidation catalyst to comply with MACT:

- Maintain your catalyst so that the pressure drop across the catalyst does not change by more than two inches of water at 100 percent load plus or minus 10 percent from the pressure drop across the catalyst measured during the initial performance test; and
- Maintain the temperature of your engine exhaust so that the catalyst inlet temperature is greater than or equal to 450°F and less than or equal to 1350°F.

Note that you establish the initial pressure drop across the catalyst during the initial performance test. The allowable range for pressure drop is  $\pm 2''$  WC from the initial pressure drop. Also note that if you change your catalyst, you are required to reestablish the initial pressure drop for the new catalyst element.

As discussed further below, to demonstrate compliance with these operating limits, you must measure pressure drop across the catalyst monthly, and you must continuously monitor temperature at the catalyst inlet (i.e., the stationary RICE exhaust temperature at the catalyst inlet).

#### **5.3.2 Monthly Pressure Drop Measurements**

You demonstrate that you are meeting the pressure drop operating limit by measuring the pressure drop across the catalyst once a month [Table 6, items 1 and 7]. The monthly

pressure drop measurements should be taken while the engine is operating at 100% load  $\pm 10\%$ .

You are meeting the operating limit if the pressure drop measured each month is within two inches of water of the pressure drop measured during the performance test [Table 2b, item 1].

### 5.3.3 Continuous Catalyst Inlet Temperature Monitoring

You are required to install and operate a continuous parameter monitoring system (CPMS) to measure catalyst inlet temperature [Table 5, items 1 and 6]. You must collect the catalyst inlet temperature data and reduce these data to 4-hour rolling averages [Table 6, items 1 and 7].<sup>66</sup> You are meeting the oxidation catalyst inlet temperature operating limit if the 4-hour rolling average oxidation catalyst inlet temperature is greater than or equal to 450°F or less than or equal to 1,350°F [Table 2b, item 1].

### 5.3.4 Continuous Parameter Monitoring System Requirements

For each stationary RICE, you are required to install a CPMS to continuously monitor catalyst inlet temperature (Table 5, items 1 and 6). For each CPMS, you are required to follow certain operation and maintenance requirements; prepare a quality control program; and conduct performance evaluations.

#### 5.3.4.1 Operation and maintenance requirements for CPMS

There are several operation and maintenance requirements for your CPMS [§63.8(c)]:

- You must operate the CPMS at all times, including during periods of startup, shutdown, or malfunction;
- You must have the necessary parts for routine repairs of the CPMS readily available;
- You must develop a written startup, shutdown, and malfunction (SSM) plan for CPMS (see section 5.6 of this document for specific SSM plan requirements);
- The read-out (i.e., visual display or record), or some indication of operation, from your CPMS must be readily accessible for control or inspection by the equipment operator;
- You must install and have the CPMS operational and have the data verified before or at the time of the initial performance test (you verify the operational status of your CPMS by, at a minimum, completing the manufacturer's written specifications or recommendations for installation, operation and calibration of the system);
- You must operate the CPMS continuously except for system breakdowns, out-of-control periods, repairs, maintenance periods, calibration checks, and zero (low-level) and high-level calibration drift adjustments;

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<sup>66</sup> To calculate a rolling average, each hour you calculate the average catalyst inlet temperature for the current hour and the previous three hours.

- You must calibrate the CPMS prior to use;
- You must check each CPMS daily for indication that the system is responding;
- If the CPMS has an internal system check, you must record and check the results on a daily basis for proper operation;
- If you have a CPMS that is out of control,<sup>67</sup> you are required to take the necessary corrective action and repeat all necessary tests which indicate that the system is out of control. You also are required to take corrective actions and conduct retesting until the performance requirements are below the applicable limits. You may not use data recorded during periods that the CPMS is out of control in data averages or calculations.
- If you have a CPMS that is out of control,<sup>68</sup> you have to submit all information concerning out-of-control periods, including start and end dates, hours, and descriptions of your corrective actions in the semiannual compliance report (see section 5.8 of this document for more details on this report).

#### 5.3.4.2 Quality Control Program

You are required to develop and implement a quality control program for your CPMS [§63.8(d)]. The program must contain a written protocol that describes the procedures for the following operations:

- Initial and any subsequent calibration of the CPMS;
- Determination and adjustment of the calibration drift of the CPMS;
- Preventive maintenance of the CPMS, including spare parts inventory;
- Data recording, calculations, and reporting;
- Accuracy audit procedures, including sampling and analysis methods; and
- Program of corrective action for a malfunctioning CPMS.

You are required to maintain these written procedures on record for the life of the stationary RICE or until your stationary RICE is no longer subject to the RICE MACT. If appropriate, you may incorporate these written procedures as part of your SSM plan to avoid duplicating planning and recordkeeping efforts.

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<sup>67</sup> Your CPMS is considered out of control if: (1) the zero (low-level), mid-level (if applicable), or high-level calibration drift (CD) exceeds two times the applicable CD specification in the performance standard; or (2) the CPMS fails a performance test audit (e.g., cylinder gas audit), relative accuracy audit, relative accuracy test audit, or linearity test audit. The beginning of the out-of-control period is the hour you conduct a performance check (e.g., CD) that indicates an exceedance of the established performance requirements. The end of the out-of-control period is the hour following the completion of the corrective action and successful demonstration that the system is within the allowable limits.

<sup>68</sup> Your CPMS is considered out of control if: (1) the zero (low-level), mid-level (if applicable), or high-level calibration drift (CD) exceeds two times the applicable CD specification in the performance standard; or (2) the CPMS fails a performance test audit (e.g., cylinder gas audit), relative accuracy audit, relative accuracy test audit, or linearity test audit. The beginning of the out-of-control period is the hour you conduct a performance check (e.g., CD) that indicates an exceedance of the established performance requirements. The end of the out-of-control period is the hour following the completion of the corrective action and successful demonstration that the system is within the allowable limits.

#### 5.3.4.3 Performance Evaluation

You are required to conduct a performance evaluation for each CPMS [§63.8(e)]. You must conduct the performance evaluation on your CPMS during the initial performance test required under the RICE MACT. You are required to notify the Administrator in writing of the date that you are going to conduct your performance evaluation at the same time as the notification to conduct your performance test.

Before conducting the performance evaluation, you must prepare a site-specific performance evaluation test plan. The following elements must be included in the test plan:

- the evaluation program objectives;
- an evaluation program summary;
- the performance evaluation schedule;
- data quality objectives (the pre-evaluation expectations of precision, accuracy, and completeness of data);
- an internal QA program, which must include, at a minimum, the activities planned by routine operators and analysts to provide an assessment of CPMS performance; and
- an external QA program which must include, at a minimum, systems audits that include the opportunity for on-site evaluation by the Administrator of instrument calibration, data validation, sample logging, and documentation of quality control data and field maintenance activities.

You must submit the performance evaluation test plan ONLY if requested by EPA or the delegated authority. If requested, the site-specific performance evaluation test plan must be submitted at least 60 days before the performance test or performance evaluation is scheduled to begin, or on a mutually agreed upon date. The Administrator will review and approve the performance evaluation test plan at the same time as the review and approval of the site-specific test plan (if review of the site-specific test plan is requested). The Administrator may request additional relevant information after the submittal of a site-specific performance evaluation test plan.

If the Administrator fails to approve or disapprove the site-specific performance evaluation test plan within the 30 calendar days after receipt of the test plan, the following conditions apply:

- If you intend to demonstrate compliance using the monitoring method(s) specified in the RICE MACT, you are required to conduct the performance evaluation at the same time as the performance test using the specified method(s);
- If you intend to demonstrate compliance by using an alternative monitoring method, you must not conduct the performance evaluation until the Administrator approves the use of the alternative method. If the Administrator does not approve the alternative method within 30 days before the performance evaluation is scheduled to begin, the performance evaluation deadlines may be extended such that you must conduct the performance evaluation within 60 calendar days after the Administrator approves the use of the alternative method. You may proceed to

conduct the performance evaluation (without the Administrator's prior approval of the site-specific performance evaluation test plan) if you subsequently choose to use the specified monitoring method(s) instead of an alternative.

## **5.4 What are the Operating Limits and Parameter Monitoring Requirements If I am not Using Oxidation Catalyst?**

If you choose to meet the CO or formaldehyde emission limits using a control technique other than oxidation catalyst, you are required to petition the Administrator for approval of operating limitations to be established during the initial performance test. If you feel that no operating limits are appropriate for your technology, you may also petition the Administrator for approval of no operating limitations. Your petition has to receive approval from the Administrator before you can conduct your initial performance test [§63.6620(f)].

### **5.4.1 Petition for Approval of Operating Limitations**

If you petition the Administrator for approval of operating limitations, the petition must contain the following information [§63.6620(g)]:

- You must identify the specific parameters you propose to use as operating limitations;
- You must provide a discussion of the relationship between these parameters and HAP emissions, identifying how HAP emissions change with changes in these parameters, and how limitations on these parameters will serve to limit HAP emissions;
- You must provide a discussion of how you will establish the upper and/or lower values for these parameters which will establish the limits on these parameters in the operating limitations;
- You must provide a discussion identifying the methods you will use to measure and the instruments you will use to monitor these parameters, as well as the relative accuracy and precision of these methods and instruments; and
- You must provide a discussion identifying the frequency and methods for recalibrating the instruments you will use for monitoring these parameters.

### **5.4.2 Petition for Approval of No Operating Limitations**

If you petition the Administrator for approval of no operating limitations, your petition must include the following information [§63.6620(h)]:

- You must identify the parameters associated with operation of the stationary RICE and the emission control device which could change intentionally (e.g., operator adjustment, automatic controller adjustment, etc.) or unintentionally (e.g., wear and tear, error, etc.) on a routine basis or over time;
- You must provide a discussion of the relationship, if any, between changes in the parameters and changes in HAP emissions;
- For the parameters which could change in such a way as to increase HAP emissions, you must provide a discussion of whether establishing limitations on the parameters would serve to limit HAP emissions;
- For the parameters which could change in such a way as to increase HAP emissions, you must provide a discussion of how you could establish upper and/or

lower values for the parameters which would establish limits on the parameters in operating limitations;

- For the parameters which could change in such a way as to increase HAP emissions, you must provide a discussion identifying the methods you could use to measure them and the instruments you could use to monitor them, as well as the relative accuracy and precision of the methods and instruments;
- For the parameters which could change in such a way as to increase HAP emissions, you must provide a discussion identifying the frequency and methods for recalibrating the instruments you could use to monitor them; and
- You must provide a discussion of why, from your point of view, it is infeasible or unreasonable to adopt the parameters as operating limitations.

### 5.4.3 Continuous Parameter Monitoring System Requirements

If you have petitioned the Administrator for operating limitations, for each stationary RICE you are required to install a continuous parameter monitoring system (CPMS) to continuously monitor your approved operating parameters. For each CPMS, you are required to follow certain operation and maintenance requirements; prepare a quality control program; and conduct performance evaluations.

#### 5.4.3.1 Operation and maintenance requirements for CPMS

There are several operation and maintenance requirements for operation of your CPMS [§63.8(c)]:

- You must operate the CPMS at all times, including during periods of startup, shutdown, or malfunction;
- You must have the necessary parts for routine repairs of the CPMS readily available;
- You must develop a written startup, shutdown, and malfunction (SSM) plan for CPMS (see section 5.6 of this document for specific SSM plan requirements);
- The read-out (i.e., visual display or record), or some indication of operation, from your CPMS must be readily accessible for control or inspection by the equipment operator;
- You must install and have the CPMS operational and have the data verified before or at the time of the initial performance test (you verify the operational status of your CPMS by, at a minimum, completing the manufacturer's written specifications or recommendations for installation, operation and calibration of the system);
- You must operate the CPMS continuously except for system breakdowns, out-of-control periods, repairs, maintenance periods, calibration checks, and zero (low-level) and high-level calibration drift adjustments;
- You must calibrate the CPMS prior to use;
- You must check each CPMS daily for indication that the system is responding;
- If the CPMS has an internal system check, you must record and check the results on a daily basis for proper operation;

- If you have a CPMS that is out of control,<sup>69</sup> you are required to take the necessary corrective action and repeat all necessary tests which indicate that the system is out of control. You also are required to take corrective actions and conduct retesting until the performance requirements are below the applicable limits. You may not use data recorded during periods that the CPMS is out of control in data averages or calculations.
- If you have a CPMS that is out of control,<sup>70</sup> you have to submit all information concerning out-of-control periods, including start and end dates, hours, and descriptions of your corrective actions in the semiannual compliance report (see section 5.8 of this document for more details on this report).

#### 5.4.3.2 Quality Control Program

You are required to develop and implement a quality control program for your CPMS [§63.8(d)]. The program must contain a written protocol that describes the procedures for the following operations:

- Initial and any subsequent calibration of the CPMS;
- Determination and adjustment of the calibration drift of the CPMS;
- Preventive maintenance of the CPMS, including spare parts inventory;
- Data recording, calculations, and reporting;
- Accuracy audit procedures, including sampling and analysis methods; and
- Program of corrective action for a malfunctioning CPMS.

You are required to maintain these written procedures on record for the life of the stationary RICE or until your stationary RICE is no longer subject to the RICE MACT. If appropriate, you may incorporate these written procedures as part of your SSM plan to avoid duplicating planning and recordkeeping efforts.

#### 5.4.3.3 Performance Evaluation

You are required to conduct a performance evaluation for each CPMS [§63.8(e)]. You must conduct the performance evaluation on your CPMS during the initial performance test required under the RICE MACT. You are required to notify the Administrator in

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<sup>69</sup> Your CPMS is considered out of control if: (1) the zero (low-level), mid-level (if applicable), or high-level calibration drift (CD) exceeds two times the applicable CD specification in the performance standard; or (2) the CPMS fails a performance test audit (e.g., cylinder gas audit), relative accuracy audit, relative accuracy test audit, or linearity test audit. The beginning of the out-of-control period is the hour you conduct a performance check (e.g., CD) that indicates an exceedance of the established performance requirements. The end of the out-of-control period is the hour following the completion of the corrective action and successful demonstration that the system is within the allowable limits.

<sup>70</sup> Your CPMS is considered out of control if: (1) the zero (low-level), mid-level (if applicable), or high-level calibration drift (CD) exceeds two times the applicable CD specification in the performance standard; or (2) the CPMS fails a performance test audit (e.g., cylinder gas audit), relative accuracy audit, relative accuracy test audit, or linearity test audit. The beginning of the out-of-control period is the hour you conduct a performance check (e.g., CD) that indicates an exceedance of the established performance requirements. The end of the out-of-control period is the hour following the completion of the corrective action and successful demonstration that the system is within the allowable limits.

writing of the date that you are going to conduct your performance evaluation at the same time you submit the notification to conduct your performance test. If you are not conducting a performance test, the performance evaluation notification must be submitted at least 60 days prior to the date that you are scheduled to begin the performance evaluation.

Before conducting the performance evaluation, you may be required to develop and submit a site-specific performance evaluation test plan to the Administrator for approval. The following elements must be included in the test plan:

- the evaluation program objectives;
- an evaluation program summary;
- the performance evaluation schedule;
- data quality objectives (the pre-evaluation expectations of precision, accuracy, and completeness of data);
- an internal QA program, which must include, at a minimum, the activities planned by routine operators and analysts to provide an assessment of CMS performance; and
- an external QA program which must include, at a minimum, systems audits that include the opportunity for on-site evaluation by the Administrator of instrument calibration, data validation, sample logging, and documentation of quality control data and field maintenance activities.

If the Administrator requests that you submit a site-specific performance evaluation test plan for approval, it is due at least 60 days before the performance test or performance evaluation is scheduled to begin, or on a mutually agreed upon date. The Administrator will review and approve the performance evaluation test plan at the same time as the review and approval of the site-specific test plan (if review of the site-specific test plan is requested). The Administrator may request additional relevant information after the submittal of a site-specific performance evaluation test plan.

If the Administrator fails to approve or disapprove the site-specific performance evaluation test plan within the 30 calendar days after receipt of the test plan, the following conditions apply:

- If you intend to demonstrate compliance using the monitoring method(s) specified in the RICE MACT, you are required to conduct the performance evaluation at the same time as the performance test using the specified method(s);
- If you intend to demonstrate compliance by using an alternative monitoring method, you must not conduct the performance evaluation until the Administrator approves the use of the alternative method. If the Administrator does not approve the alternative method within 30 days before the performance evaluation is scheduled to begin, the performance evaluation deadlines may be extended such that you must conduct the performance evaluation within 60 calendar days after the Administrator approves the use of the alternative method. You may proceed to conduct the performance evaluation (without the Administrator's prior approval of the site-specific performance evaluation test plan) if you subsequently chooses to use the specified monitoring method(s) instead of an alternative.

#### 5.4.4 Requirements for Approved Operating Limits

You are required to install and operate a CPMS to measure your approved operating limit [Table 5, items 2 and 7]. You must collect the parameter data you approved by the Administrator and reduce these data to 4-hour rolling averages [Table 6, items 2 and 8].<sup>71</sup> You are meeting the approved operating limit if the 4-hour rolling average parameter data is within your approved operating limitations for the operating parameters established during the initial performance test.

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<sup>71</sup> To calculate a rolling average, each hour you calculate the average NSCR inlet temperature for the current hour and the previous three hours.

## 5.5 What are the Monitoring Requirements If I am using a CEMS?

If you are complying with the CO percent reduction emission limitation, you have the option of installing a CEMS to demonstrate that you are reducing CO by 58 percent or more. You may choose this option for any control technique. You must install a CEMS to continuously monitor CO and either oxygen or CO<sub>2</sub> at both the inlet and outlet of the control device according to the following [§63.6625(a)]:

- You must install, operate and maintain each CEMS as specified in performance specifications (PS) 3 and 4A of 40 CFR part 60, appendix B.
- You must conduct an initial performance evaluation and an annual relative accuracy test audit (RATA) according to §63.8 and PS 3 and 4 (40 CFR part 60, appendix B).
- You must conduct daily and periodic data quality checks specified in 40 CFR part 60, appendix F, procedure 1.
- You must install the CEMS such that a minimum of one cycle of operation (sampling, analyzing, and data recording) is completed for each successive 15-minute period. There must be two data points, with each representing a different 15-minute period, to have a valid hour of data.
- You must reduce the CEMS data to 1-hour averages computed from four or more data points equally spaced over each 1-hour period, except during periods when calibration, quality assurance, or maintenance activities are being performed. During these periods, an hourly average is considered valid if you have at least two data points, each representing a 15-minute period. NOTE: You may also use an arithmetic or integrated 1-hour average of CEMS data.
- You must also keep records of the reduced data in parts per million at 15 percent oxygen or the equivalent CO<sub>2</sub> concentration.

### 5.5.1 Initial Performance Evaluation Requirements

For each CEMS, you must conduct an initial performance evaluation and an initial RATA using the procedures specified in §63.8 and PS 3 (for oxygen or CO<sub>2</sub>) and 4A (for CO) of 40 CFR part 60, appendix B. You are not required to conduct the performance tests specified in Table 4. The initial performance evaluation must be conducted by February 12, 2005 or within 180 days after startup of your new or reconstructed stationary RICE, whichever date is later.

Once the performance evaluation has been completed you must calculate the average CO percent reduction. This calculation is based on the first four hours of monitoring data collected once the CEMS has been successfully validated [Table 5, item 3.a.iii].

Determine compliance with the CO percent reduction requirement using the following set of equations [§63.6620(e)]:

$$R = \frac{C_i - C_o}{C_i} \times 100$$

Where:

- $C_i$  = concentration of CO at the oxidation catalyst or other control device inlet,  
 $C_o$  = concentration of CO at the oxidation catalyst or other control device outlet,  
 $R$  = percent reduction of CO emissions.

You are required to normalize the CO concentration at the inlet and outlet of the oxidation catalyst or other control device to 15% O<sub>2</sub> and a dry basis, or an equivalent percent CO<sub>2</sub>. Use a CO<sub>2</sub> correction factor if CO<sub>2</sub> concentration is measured as an exhaust diluent in lieu of measuring O<sub>2</sub> concentration.

***CO<sub>2</sub> correction factor:***

Step 1: Calculate the fuel-specific  $F_o$  value for the fuel burned during the test.

$$F_o = \frac{0.209 F_d}{F_c}$$

Where:

- $F_o$  = Fuel factor based on the ratio of oxygen volume to the ultimate CO<sub>2</sub> volume produced by the fuel at zero percent excess air.  
0.209 = Fraction of air that is oxygen, percent/100.  
 $F_d$  = Ratio of the volume of dry effluent gas to the gross calorific value of the fuel from Method 19, dsm<sup>3</sup>/J (dscf/106 Btu).  
 $F_c$  = Ratio of the volume of CO<sub>2</sub> produced to the gross calorific value of the fuel from Method 19, dsm<sup>3</sup>/J (dscf/106 Btu).

Step 2: Calculate the CO<sub>2</sub> correction factor for correcting measurement data to 15 percent oxygen.

$$X_{CO_2} = \frac{5.9}{F_o}$$

Where:

- $X_{CO_2}$  = CO<sub>2</sub> correction factor, percent.  
5.9 = 20.9 percent O<sub>2</sub> - 15 percent O<sub>2</sub>, the defined O<sub>2</sub> correction value, percent.

Step 3: Calculate the NO<sub>x</sub> and SO<sub>2</sub> gas concentrations adjusted to 15 percent O<sub>2</sub> using CO<sub>2</sub> as follows:

$$C_{adj} = C_d \frac{X_{CO_2}}{\%CO_2}$$

Where:

%CO<sub>2</sub> = Measured CO<sub>2</sub> concentration measured, dry basis, percent.

### 5.5.2 Additional Requirements

You are required to conduct annual RATA of each CEMS using PS 3 (for oxygen or CO<sub>2</sub>) and PS 4A (for CO) [40 CFR part 60, appendix B], as well as the daily and periodic data quality checks specified in 40 CFR part 60, appendix F, procedure 1.

You must collect monitoring data (see section 5.5.3 for specific monitoring installation, operation, and maintenance requirements) and reduce the measurements to one-hour averages and calculate the percent reduction of CO emissions using the formulas presented in section 5.5.1. You must collect the one-hour average CO percent reduction data and reduce these data to 4-hour rolling averages [Table 6, item 3].<sup>72</sup> You are meeting the CO percent reduction emission limit if the 4-hour rolling average CO percent reduction is greater than or equal to 58 percent.

### 5.5.3 Continuous Emission Monitoring System Requirements

For each CEMS, you are required to follow certain operation and maintenance requirements; prepare a quality control program; and conduct performance evaluations.

#### 5.5.3.1 Operation and maintenance requirements for CEMS

There are several operation and maintenance requirements for your CEMS [§63.8(c)]:

- You must operate the CEMS at all times, including during periods of startup, shutdown, or malfunction;
- You must have the necessary parts for routine repairs of the CEMS readily available;
- You must develop a written startup, shutdown, and malfunction (SSM) plan for CEMS (see section 5.6 of this document for specific SSM plan requirements);
- The read-out (i.e., visual display or record), or some indication of operation, from your CEMS must be readily accessible for control or inspection by the equipment operator;
- You must install and have the CEMS operational and have the data verified either prior to or during the initial performance evaluation (you verify the operational status of your CEMS by, at a minimum, completing the manufacturer's written specifications or recommendations for installation, operation and calibration of the system);
- You must operate the CEMS continuously except for system breakdowns, out-of-control periods, repairs, maintenance periods, calibration checks, and zero (low-level) and high-level calibration drift adjustments;
- Each CEMS must complete a minimum of one cycle of operation (i.e., sampling, analyzing, and data recording) for each successive 15-minute period;

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<sup>72</sup> To calculate a rolling average, each hour you calculate the average CO percent reduction for the current hour and the previous three hours.

- You must check the zero (low-level) and high-level calibration drifts of each CEMS installed according to PS 3 (for oxygen or CO<sub>2</sub>) or PS 4A (for CO) at least once daily according to your performance evaluation plan (see section 5.5.1.3). You must adjust the zero (low-level) and high-level calibration drifts, at a minimum, whenever the 24-hour zero (low-level) drift exceeds two times the limits specified in the PS. The system must allow the amount of excess zero (low-level) and high-level drift measured at the 24-hour interval checks to be recorded and quantified whenever specified.
- If you have a CEMS that is out of control,<sup>73</sup> you are required to take the necessary corrective action and repeat all necessary tests which indicate that the system is out of control. You also are required to take corrective actions and conduct retesting until the performance requirements are below the applicable limits. You may not use data recorded during periods that the CEMS is out of control in data averages or calculations.
- If you have a CEMS that is out of control,<sup>74</sup> you have to submit all information concerning out-of-control periods, including start and end dates, hours, and descriptions of your corrective actions in the semiannual compliance report (see section 5.8 of this document for more details on this report).

#### 5.5.3.2 Quality Control Program

You are required to develop and implement a quality control program for your CEMS [§63.8(d)]. The program must contain a written protocol that describes the procedures for the following operations:

- Initial and any subsequent calibration of the CEMS;
- Determination and adjustment of the calibration drift of the CEMS;
- Preventive maintenance of the CEMS, including spare parts inventory;
- Data recording, calculations, and reporting;
- Accuracy audit procedures, including sampling and analysis methods; and
- Program of corrective action for a malfunctioning CEMS.

You are required to maintain these written procedures on record for the life of the stationary RICE or until your stationary RICE is no longer subject to the RICE MACT. If appropriate, you may incorporate these written procedures as part of your SSM plan to avoid duplicating planning and recordkeeping efforts.

#### 5.5.3.3 Performance Evaluation

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<sup>73</sup> Your CEMS is considered out of control if: (1) the zero (low-level), mid-level (if applicable), or high-level calibration drift (CD) exceeds two times the applicable CD specification in PS 3 or 4A (40 CFR part 60, appendix B; or (2) the CEMS fails a performance test audit (e.g., cylinder gas audit), relative accuracy audit, relative accuracy test audit, or linearity test audit. The beginning of the out-of-control period is the hour you conduct a performance check (e.g., CD) that indicates an exceedance of the established performance requirements. The end of the out-of-control period is the hour following the completion of the corrective action and successful demonstration that the system is within the allowable limits.

<sup>74</sup> See footnote 73.

You are required to conduct a performance evaluation for each CEMS [§63.8(e)]. You must conduct this performance evaluation by February 12, 2005 or within 180 days after startup, whichever is later. You are required to notify the Administrator in writing of the date that you are going to conduct your performance evaluation at least 60 days before the performance evaluation is scheduled to begin.

Before conducting the performance evaluation, you must prepare a site-specific performance evaluation test plan. The following elements must be included in the test plan:

- the evaluation program objectives;
- an evaluation program summary;
- the performance evaluation schedule;
- data quality objectives (the pre-evaluation expectations of precision, accuracy, and completeness of data);
- an internal QA program, which must include, at a minimum, the activities planned by routine operators and analysts to provide an assessment of CEMS performance; and
- an external QA program which must include, at a minimum, systems audits that include the opportunity for on-site evaluation by the Administrator of instrument calibration, data validation, sample logging, and documentation of quality control data and field maintenance activities.

You must submit the performance evaluation test plan ONLY if requested by EPA or the delegated authority. If requested, the site-specific performance evaluation test plan must be submitted at least 60 days before the performance evaluation is scheduled to begin, or on a mutually agreed upon date. The Administrator will review and approve the performance evaluation test plan. The Administrator may request additional relevant information after the submittal of a site-specific performance evaluation test plan.

If the Administrator fails to approve or disapprove the site-specific performance evaluation test plan within the 30 calendar days after receipt of the test plan, the following conditions apply:

- If you intend to demonstrate compliance using the monitoring method(s) specified in the RICE MACT, you are required to conduct the performance evaluation using the specified method(s);
- If you intend to demonstrate compliance by using an alternative monitoring method, you must not conduct the performance evaluation until the Administrator approves the use of the alternative method. If the Administrator does not approve the alternative method within 30 days before the performance evaluation is scheduled to begin, the performance evaluation deadlines may be extended such that you must conduct the performance evaluation within 60 calendar days after the Administrator approves the use of the alternative method. You may proceed to conduct the performance evaluation (without the Administrator's prior approval of the site-specific performance evaluation test plan) if you subsequently choose to use the specified monitoring method(s) instead of an alternative.

## **5.6 What are the Startup, Shutdown, and Malfunction (SSM) Requirements?**

You are required to operate your oxidation catalyst or other control device as well as any CPMS or CEMS at all times, including periods of startup, shutdown, and malfunction (SSM), in a safe manner and according to good air pollution control practices to minimize emissions.

A startup is defined as “the setting in operation of an affected source or portion of an affected source for any purpose.” [§63.2]

A shutdown is defined as “the cessation of operation of an affected source or portion of an affected source for any purpose.” [§63.2]

A malfunction is defined as “any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.” [§63.2]

### **5.6.1 What are my requirements during SSM events?**

You are responsible for reducing emissions to the greatest extent possible and maintain safety and good air control practices whenever there is a period of SSM. This does not mean that you are required to achieve the emission levels required under the RICE MACT during SSM events if it means that you would not be operating in a safe manner and with good air pollution practices nor are you required to make any further efforts to reduce emissions if you are meeting the emission levels required by the RICE MACT.

### **5.6.2 Startup, Shutdown and Malfunction Plan**

You are required to develop and implement a written startup, shutdown, and malfunction (SSM) plan that describes, in detail, procedures for operating and maintaining the each stationary RICE during periods of SSM, and a program of corrective action for malfunctioning process and air pollution control and monitoring equipment (i.e., oxidation catalyst or other control device, pressure drop monitoring equipment, and CPMS or CEMS). You must develop this plan by August 16, 2004 if construction or reconstruction of your new or reconstructed stationary RICE commenced on or after December 19, 2002 but before August 16, 2004. If construction or reconstruction of your new or reconstructed stationary RICE began after August 16, 2004, you must have your SSM plan developed by startup [§63.6(e)(3)(i)].

During periods of SSM, you must operate and maintain your stationary RICE (including each oxidation catalyst or other control device and monitoring equipment) in accordance with the procedures specified in your SSM plan [§63.6(e)(3)(ii)].

#### 5.6.2.1 What must be included in my SSM plan?

EPA does not specify the required elements of a SSM plan, but the SSM plan must address the following [§63.6(e)(3)(i)(A) through (C)]:

1. Ensure that, at all times, you operate and maintain each stationary RICE, including your oxidation catalyst or other control device and monitoring equipment, in a manner which satisfies your general duty to minimize emissions;
2. Ensure that you are prepared to correct malfunctions as soon as practicable after their occurrence in order to minimize excess emissions of hazardous air pollutants; and
3. Reduce the reporting burden associated with periods of startup, shutdown, and malfunction (including corrective action taken to restore malfunctioning process and air pollution control equipment to its normal or usual manner of operation).

To develop your SSM plan, you may use your standard operating procedures (SOP) manual, or an Occupational Safety and Health Administration (OSHA) or other plan, provided the alternative plans meet the SSM plan requirements and are made available for inspection or submitted when requested by EPA or the delegated authority [§63.6(e)(3)(vi)].

#### 5.6.2.2 When may the SSM plan be revised?

You may periodically revise the SSM plan for your stationary RICE as necessary to satisfy the requirements of 40 CFR part 63 or to reflect changes in equipment or procedures at the affected source. Unless EPA or your permitting authority provides otherwise, you may make such revisions to the startup, shutdown, and malfunction plan without prior approval by EPA or the permitting authority [§63.6(e)(3)(viii)]. However, each revision to a SSM plan must be reported in the semiannual compliance report (see section 5.8.6).

If the SSM plan fails to address or inadequately addresses an event that meets the characteristics of a malfunction but was not included in the SSM plan at the time you developed the plan, you must revise the SSM plan within 45 days after the event to include detailed procedures for operating and maintaining the source during similar malfunction events and a program of corrective action for similar malfunctions of process or air pollution control and monitoring equipment [§63.6(e)(3)(viii)].

In the event that you make any revision to the SSM plan which alters the scope of the activities which are deemed to be an SSM, or otherwise modify the applicability of any emission limit or other RICE MACT requirement, the revised plan may not take effect until after you have provided a written notice describing the revision to your permitting authority [§63.6(e)(3)(viii)].

If EPA or the delegated authority determines that you are not operating and maintaining your stationary RICE (including the oxidation catalyst or other control device and monitoring equipment) in such a way that is consistent with safety and good air pollution control practices [§63.6(e)(1)(i)], EPA or the delegated authority may require you to make changes to the SSM plan for that stationary RICE. EPA or the delegated authority must require appropriate revisions to a SSM plan, if EPA or the delegated authority finds that the plan [§63.6(e)(3)(vii)]:

- Does not address a SSM event that has occurred;
- Fails to provide for the operation of the stationary RICE (including the oxidation catalyst or other control device and monitoring equipment) during a SSM event in a manner consistent with the general duty to minimize emissions established by §63.6(e)(1)(i);
- Does not provide adequate procedures for correcting malfunctioning process and/or air pollution control and monitoring equipment as quickly as practicable; or
- Includes an event that does not meet the definition of startup, shutdown, or malfunction listed in §63.2.

The title V permit for a stationary RICE must require that you adopt a SSM plan which conforms to part 63, and that you operate and maintain the stationary in accordance with the procedures specified in the current SSM plan. However, any revisions made to the SSM plan as specified above do not constitute permit revisions under part 70 or part 71 of this chapter. Moreover, none of the procedures specified by the SSM plan for an affected source shall be deemed to fall within the permit shield provision in section 504(f) of the Act [§63.6(e)(3)(ix)].

#### **5.6.2.3      What are my requirements for maintaining my SSM plan?**

You must maintain a current SSM plan and must make the plan available upon request for inspection and copying by the EPA or delegated authority. In addition, if you subsequently revise your SSM plan (see section 5.6.2.2), you must keep each previous (i.e., superseded) version of the SSM plan, and must make each such previous version available for inspection and copying by the EPA or the delegated authority for 5 years after revision of the plan. If at any time after adoption of an SSM plan the stationary RICE ceases operation or is otherwise no longer subject to the RICE MACT, you must keep a copy of the most recent plan for 5 years from the date the stationary RICE ceases operation or is no longer subject the RICE MACT and must make the plan available upon request for inspection and copying by EPA or the delegated authority [§63.6(e)(3)(v)].

EPA or the delegated authority may at any time request in writing that you submit a copy of any SSM plan (or a portion thereof). Upon receipt of such a request, you must promptly submit a copy of the requested plan (or a portion thereof) to EPA or the delegated authority. EPA or the delegated authority must request that you submit a particular SSM plan (or a portion thereof) whenever a member of the public submits a specific and reasonable request to examine or to receive a copy of that plan or portion of a plan. You may elect to submit the required copy of any SSM plan in an electronic

format. If you claim that any portion of such a SSM plan is confidential business information entitled to protection from disclosure under section 114(c) of the Act or 40 CFR 2.301, the material which is claimed as confidential must be clearly designated in the submission. [§63.6(e)(3)(v)]

### 5.6.3 How do I demonstrate I am following my SSM plan?

When you take actions during a period of SSM (including actions taken to correct a malfunction) that are consistent with the procedures specified in the SSM plan developed for your stationary RICE, you must do the following [§63.6(e)(iii)]:

- You must keep records for that event which demonstrate that the procedures specified in the plan were followed. These records may take the form of a “checklist,” or other form of recordkeeping that confirms that you followed the procedures defined in your SSM plan for that event.
- You must keep the following records of these events [§63.10(b)(2)]:
  - Records of the occurrence and duration of each startup, shutdown, or malfunction of operation
  - Records of the occurrence and duration of each malfunction of the OXIDATION CATALYST or other control device and monitoring equipment
- You must confirm that actions taken during the relevant reporting period during periods of SSM were consistent with the startup, shutdown and malfunction plan developed for each stationary RICE in the semiannual (or more frequent) startup, shutdown, and malfunction report required in §63.10(d)(5). Note that this information may also be incorporated into your semiannual compliance report (see section 5.8.6).

If you take an action during a startup, shutdown, or malfunction (including an action taken to correct a malfunction) that is not consistent with the procedures specified in your stationary RICE's startup, shutdown, and malfunction plan, and the stationary RICE exceeds the applicable emission limitation, then you must record the actions taken for that event and must report such actions within 2 working days after commencing actions inconsistent with the plan, followed by a letter within 7 working days after the end of the event, in accordance with §63.10(d)(5) (unless the owner or operator makes alternative reporting arrangements, in advance, with the Administrator) [§63.6(e)(3)(iv)].

## **5.7 What Records Must I Keep?**

You are required to keep records of activities required to meet the final RICE MACT. You must keep files of all information (including reports and notifications) required under the RICE MACT in a format suitable and readily available for “expeditious inspection and review [§63.6660(a)].” You must maintain these records for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record [§63.6660(b)]. Records may be kept in hard copy or electronic form. You may retain at least 2 years of records on-site. You can keep records off-site for the remaining 3 years [§63.6660(c)].

### **5.7.1 Recordkeeping Requirements for Notifications and Reports**

You are required to keep a copy of each notification and report that you have submitted as a part of complying with the RICE MACT, including all documentation supporting any notification or report [§63.6655(a)(1)]. You must maintain records of the following notifications and reports (see section 5.8 of this document for details regarding these notifications and reports):

- Initial Notification;
- Notifications of performance tests;
- Site-specific test plan;
- Notification of performance evaluation for continuous monitoring systems (CMS), including both CPMS and CEMS;
- Site-specific performance evaluation plan(s);
- Any request to use an alternative monitoring procedure;
- Any request for extension of compliance;
- Notification that your source is subject to special compliance requirements;
- Notification of compliance status, including performance test results and written report to document engine load conditions during the test;
- Semiannual compliance reports; and
- Startup, shutdown, and malfunction reports.

### **5.7.2 Recordkeeping Requirements for Startup, Shutdown, and Malfunction Events**

You are required to keep records related to startup, shutdown and malfunction (SSM) events as follows (see section 5.6 for details on SSM events) [§§63.6655(a)(2) and 63.6(e)(3)(iii) through (v)]:

- When you take actions during an SSM event (including actions taken to correct a malfunction), that are consistent with the procedures specified your SSM plan, you must keep records which demonstrate that the procedures specified in the plan were followed. You may keep records in the form of a “checklist,” or you may choose another form of recordkeeping that documents that you have followed your SSM plan for that event.

- You must keep records of these SSM events, including records of the occurrence and duration of each startup, shutdown, or malfunction of operation and each malfunction of the air pollution control and monitoring equipment.
- When you take actions during an SSM event that are not consistent with the procedures specified in the your SSM plan, and the stationary RICE exceeds the formaldehyde emission limitations, then you must record the actions taken for that event.
- You must maintain a current SSM plan and must make the plan available upon request for inspection and copying by the Administrator. If you make revisions to your SSM plan, you are required to keep a copy of each previous (i.e., superseded) version of the SSM plan for 5 years after each revision. Previous versions must be available for inspection and copying by the Administrator.
- If at any time after adoption of a SSM plan stationary RICE ceases operation or is otherwise no longer subject to the RICE MACT, you must retain a copy of the most recent plan for 5 years from the date the stationary RICE ceases operation or is no longer subject to the RICE MACT. This plan must be available upon request for inspection and copying by the Administrator.
- The Administrator may request in writing that you submit a copy of any SSM plan (or portion of the plan). Upon receipt of such a request, you must promptly submit a copy of the requested plan (or portion of the plan) to the Administrator. The Administrator is required to request that you submit a particular SSM plan (or a portion thereof) whenever a member of the public submits a specific and reasonable request to examine or to receive a copy of that plan or portion of a plan. You may elect to submit the required copy of any SSM plan to the Administrator in an electronic format. If you claim that any portion of such a SSM plan is confidential business information entitled to protection from disclosure under section 114(c) of the Act or 40 CFR 2.301, the material which is claimed as confidential must be clearly designated in the submission.

### 5.7.3 Recordkeeping Requirements for Performance Tests and CMS

You are required to keep records of all performance test and performance evaluation results. Performance test results may include analysis of samples, determination of emissions, and raw data [§§63.6655(b) and 63.10(b)(2)(viii)].

For each CMS (this includes CPMS and CEMS), you are required to keep the following records [§§63.6655(b) and 63.10(b)(2)(vi) through (xi)]:

- All CMS performance evaluations;
- Records of each period during which the CMS is malfunctioning or inoperative (including periods where the CMS is out of control);
- All required measurements needed to demonstrate compliance with the operating limitations or the CO percent reduction emission limitation (including, but not limited to, 15-minute averages of CPMS data, raw performance testing measurements, and raw performance evaluation measurements, that support data that you are required to report);

- For each CEMS that is automated<sup>75</sup> and where the calculated data averages do not exclude periods of CEMS breakdowns or malfunction, rather than maintain a file of all CEMS subhourly measurements, you must retain the most recent consecutive three averaging periods of subhourly measurements and a file that contains a hard copy of the data acquisition system algorithm used to reduce the measured data into the reportable form of the standard.
- For each CEMS where measured data is manually reduced to the form of the emission limit, and where calculated data averages do not exclude periods of CEMS breakdowns or malfunctions, rather than maintain a file of all CEMS subhourly measurements, you must retain all subhourly measurements for the most recent reporting period. You must retain the subhourly measurements for 120 days from the date of the most recent semiannual compliance report submitted to EPA.
- EPA or the delegated authority MAY require you to maintain all subhourly records if it is determined that these records are required to more accurately assess the compliance status of your stationary RICE. You will be notified of this requirement
- All measurements as may be necessary to determine the conditions of performance tests and performance evaluations;
- All CMS calibration checks;
- All adjustments and maintenance performed on CMS;
- You must maintain a current performance evaluation test plan and quality control procedures and must make these written procedures available upon request for inspection and copying by the Administrator. If you make revisions to your performance evaluation plan, you are required to keep a copy of each previous (i.e., superseded) version of the plan for 5 years after each revision [§63.8(d)(3)]. Previous versions must be available for inspection and copying by the Administrator. If it is relevant, you may incorporate these procedures as part of your SSM plan.

You are also required to keep records of the following [§63.10(c)(1) through (14)]:

- All required CMS measurements (including monitoring data recorded during unavoidable CMS breakdowns and out-of-control periods);
- The date and time identifying each period during which the CMS was inoperative except for zero (low-level) and high-level checks;
- The date and time identifying each period during which the CMS was out of control;
- The specific identification (i.e., date and time of commencement and completion) of each period of excess emissions and parameter monitoring exceedances that occurs during startups, shutdowns, and malfunctions;

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<sup>75</sup> An automated CEMS records and reduces the measured data to the form of the emission limitation through the use of a computerized data acquisition system.

- The specific identification (i.e., date and time of commencement and completion) of each period of excess emissions and parameter monitoring exceedances that occurs during periods other than startups, shutdowns, and malfunctions;
- The nature and cause (if known) of any malfunction;<sup>76</sup>
- The corrective action taken or preventative measures adopted;<sup>77</sup>
- The nature of the repairs or adjustments to the CMS that was inoperative or out of control;<sup>78</sup>
- The total process operating time during the reporting period; and
- All procedures that are a part of a quality control program and implemented for CMS under §63.8(d).

#### 5.7.4 Recordkeeping Requirements for Monitoring Data

You are required to keep records of all monitoring data you collect to demonstrate compliance with your operating limitations [Table 6, items 1, 2, 7, and 8] or emission limitation [Table 6, item 3].

If you are using an oxidation catalyst you must keep records of the catalyst inlet temperature data measured by your CPMS and the monthly pressure drop measurements. If you are not using an oxidation, you are required to keep records of the approved operating parameter. If you are using a CEMS you are required to keep records of CO and oxygen or CO<sub>2</sub> data measured by your CEMS.

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<sup>76</sup> This item may be incorporated into your startup, shutdown, or malfunction plan and records that you are keeping as a part of your SSM plan.

<sup>77</sup> This item may be incorporated into your startup, shutdown, or malfunction plan and records that you are keeping as a part of your SSM plan.

<sup>78</sup> This item may be incorporated into your startup, shutdown, or malfunction plan and records that you are keeping as a part of your SSM plan.

## **5.8 What Notifications and Reports Must I Submit?**

For each notification and report, you send a copy to both your State Air Pollution Control Office and your EPA Regional Office. Appendix B contains a list of Regional EPA offices and addresses.

### **5.8.1 Initial Notification**

The initial notification states that your affected source is subject to the RICE standards. If you have a new or reconstructed 2SLB engine that you startup before August 16, 2004 you are required to submit the initial notification no later than December 13, 2004 [§63.6645(b)].

If you startup your new or reconstructed stationary RICE on or after August 16, 2004, you are required to submit your initial notification within 120 days after your stationary RICE becomes subject to the RICE MACT [§63.6645(c)].

You are required to provide the following information in the initial notification [§63.9(b)(2)]:

1. The name and address of the owner or operator of your facility;
2. The address (i.e., physical location) of your facility;
3. An identification of the relevant standard (in this case, 40 CFR subpart ZZZZ), that is the basis of the notification and the your compliance date;
4. A brief description of the nature, size, design, and method of operation of the source and an identification of the types of emission points within the affected source subject to the relevant standard and types of HAP emitted; and
5. A statement of whether your facility is a major source or an area source.

Appendix C contains an example initial notification form.

### **5.8.2 Notification of Intent to Conduct a Performance Test**

If you are required to conduct performance tests, you must submit a notification of intent to conduct a performance test to identify the scheduled date for the performance test. The notification must be submitted 60 days prior to the test to both your State Air Pollution Control Office and your EPA Regional Office [§§63.6645(e) and 63.7(b)(1)].

### **5.8.3 Notification of Intent to Conduct a Performance Evaluation**

If you are using a CEMS, you must submit a notification of intent to conduct a performance evaluation to identify the scheduled date for the performance evaluation. The notification must be submitted 60 days prior to the test to both your State Air Pollution Control Office and your EPA Regional Office [§63.8(e)(2)].

#### 5.8.4 Performance Test Report

You must submit a performance test report within 60 days after completing the performance test [§63.7(g)]. The report must include an analysis of samples, determination of emissions, and the raw data. The initial performance test results may be submitted with the notification of compliance status.

#### 5.8.5 Notification of Compliance Status

If you have chosen to install a CEMS to continuously monitor CO and oxygen or CO<sub>2</sub> to comply with the CO percent reduction emission limitation, you must submit your Notification of Compliance Status within 30 days following the completion of your performance evaluation [§63.6645(f)(1)].

For all other 2SLB stationary RICE for which you do not install a CEMS, you must submit the Notification of Compliance Status within 60 days following the completion of the performance test [§63.6645(f)(2)].

The Notification of Compliance Status certifies that your stationary RICE is meeting the emission limitations and operating limitations; identifies the option(s) you used to demonstrate initial compliance, summarizes the data and calculations supporting the compliance demonstration, and describes how you will determine continuous compliance.

The Notification of Compliance Status must be signed by a responsible official certifying its accuracy, attesting to whether all stationary RICE are complying with the RICE MACT. The Notification of Compliance Status must contain the following information [§63.9(h)(2)(i)]:

- The methods that were used to determine compliance;
- The results of any performance tests, CMS performance evaluations, and/or other monitoring procedures or methods that were conducted;
- The methods that will be used for determining continuing compliance, including a description of monitoring and reporting requirements and test methods;
- The CO percent reduction (percent) or the formaldehyde concentration in ppmvd at 15% O<sub>2</sub>;
- A description of the oxidation catalyst or other air pollution control equipment (or method) for each stationary RICE; and
- A statement as to whether you have complied with the RICE MACT.

A written report of the average percent load determination must be included in the notification of compliance status. The following information must be included in the report:

- the engine model number;
- the engine manufacturer;
- the year of purchase;
- the manufacturer's site-rated brake horsepower;

- the ambient temperature, pressure, and humidity measured during the performance test; and
- all assumptions that were made to estimate or calculate percent load during the performance test must be clearly explained.

If measurement devices such as flow meters, kilowatt meters, beta analyzers, stain gauges, etc. are used, the model number of the measurement device, and an estimate of its accuracy in percentage of true value must be provided.

After you have been issued a title V operating permit, you must comply with all requirements for compliance status reports contained in your title V permit. After you have been issued a title V operating permit, you are required to submit the notification of compliance status to the appropriate permitting authority following completion of the compliance demonstrations specified in the RICE MACT.

### 5.8.6 Semiannual Compliance Reports

You must submit semiannual compliance reports. The first compliance report covers the period beginning on the compliance date for your stationary RICE and ends on June 30 or December 31, whichever is the first date following the end of the first calendar half after the compliance date [§63.6650(b)(1)]. The first compliance report is due on either July 31 or January 31, whichever date follows the end of the first calendar half after the compliance date [§63.6650(b)(2)]. Subsequent reports cover the reporting periods from January 1 through June 30 or July 1 through December 31 [§63.6650(b)(3)]. Each subsequent report is due either on July 31 or January 31, whichever is the first date following the end of the semiannual reporting period [§63.6650(b)(4)].

Instead of the schedule just discussed, you may submit the first and subsequent compliance reports on the dates established by your permitting authority under title V operating permit regulations. Your facility must be subject to title V operating permit regulations under 40 CFR part 70 or 71, and your permitting authority must have established dates for submitting semiannual reports [§63.6650(b)(5)].

The semiannual compliance report must contain the following information [§63.6650(c), (d), and (e)]:

- Company name and address.
- Statement by a responsible official, with that official's name, title, and signature, certifying the accuracy of the content of the report.
- Date of report and beginning and ending dates of the reporting period.
- If applicable, a statement that you had a startup, shutdown, or malfunction during the reporting period, and actions taken during the SSM event were consistent with your SSM plan.
- If applicable, the number, duration and a description of any instance where you had a startup, shutdown, or malfunction during the reporting period, and actions taken during the SSM event were not consistent with your SSM plan but you did not exceed your formaldehyde emission limits. Also include the number,

duration, and a description of each type of malfunction that occurred during the reporting period and which caused or may have caused you to exceed your CO or formaldehyde emission limits.

- If you revised your SSM plan during the reporting period, you must include the revision.
- If there are no deviations from any emission or operating limitations that apply to you, a statement that there were no deviations from the emission or operating limitations during the reporting period.
- If there were no periods during which the CMS (including CPMS or CEMS) was out-of-control, a statement that there were no periods during which the CMS was out-of-control during the reporting period.
- A statement that during the reporting period there were no deviations from the emission limitations or operating limitations.
- You must report each time you did not meet your emission limitation or operating limitation that apply to each stationary RICE. These instances are deviations from the emission and operating limitations.
- For each deviation from an emission limitation or operating limitation for a stationary RICE where you are not using a CMS to comply with the emission or operating limitations, you must include: (1) The total operating time of the stationary RICE at which the deviation occurred during the reporting period and (2) Information on the number, duration, and cause of deviations (including unknown cause, if applicable), as applicable, and the corrective action taken.
- For each deviation from an emission limitation or operating limitation for a stationary RICE where you are using a CMS to comply with the emission or operating limitations, you must include:
  - The date and time that each malfunction started and stopped
  - The date, time, and duration that each CMS was inoperative, except for zero (low-level) and high-level checks.
  - The date, time, and duration that each CMS was out-of-control, including start and end dates and hours and descriptions of corrective actions taken.
  - The date and time that each deviation started and stopped, and whether each deviation occurred during a period of malfunction or during another period.
  - A summary of the total duration of the deviation during the reporting period, and the total duration as a percent of the total source operating time during that reporting period.
  - A breakdown of the total duration of the deviations during the reporting period into those that are due to control equipment problems, process problems, other known causes, and other unknown causes.
  - A summary of the total duration of CMS downtime during the reporting period, and the total duration of CMS downtime as a percent of the total operating time of the stationary RICE at which the CMS downtime occurred during that reporting period.
  - An identification of each parameter and pollutant (CO or formaldehyde) that was monitored at the stationary RICE.
  - A brief description of the stationary RICE.

- A brief description of the CMS.
- The date of the latest CMS certification or audit.
- A description of any changes in CMS, processes, or controls since the last reporting period.

#### **5.8.7 Immediate Startup, Shutdown, or Malfunction Reports**

A startup, shutdown, and malfunction report must be submitted immediately if any action taken during a startup, shutdown, or malfunction during the reporting period are not consistent with your SSM [Table 7]. You must report actions by phone or by fax within 2 days after starting actions inconsistent with the SSM plan, followed by letter within 7 days. The letter must include the name, title, and signature of the responsible official who is certifying its accuracy, an explanation of the circumstances of the event, the reasons for not following the SSM plan, and a description of all excess emissions and/or parameter monitoring exceedances which are believed to have occurred [§63.10(d)(5)].



## **6.0 What are the MACT Requirements for 4-Stroke Lean Burn Engines?**

The purpose of this section is to provide a detailed summary of the MACT requirements for 4-Stroke Lean Burn (4SLB) stationary RICE. Existing 4SLB stationary RICE do not have to meet any requirements under subpart ZZZZ. For each new or reconstructed 4SLB stationary RICE subject to Subpart ZZZZ, you have to comply with the full MACT requirements, including emission limitations, operating limitations, and requirements for performance tests, monitoring, recordkeeping and reporting. The following sections provide a detailed summary of these requirements.

1. What are the Emission Limitations?
2. What are the Emission Testing Requirements?
3. What are the Operating Limits and Parameter Monitoring Requirements If I Am Using an Oxidation Catalyst?
4. What are the Operating Limits and Parameter Monitoring Requirements If I Am Not Using an Oxidation Catalyst?
5. What are the Monitoring Requirements If I am using a CEMS?
6. What are the Startup, Shutdown, and Malfunction Requirements?
7. What Records Must I Keep?
8. What Notification and Reports Must I Submit?

If you do not have a new or reconstructed 4SLB stationary RICE, you may skip this section.

## **6.1 What Are The Emission Limitations?**

For each new or reconstructed spark ignition 4SLB stationary RICE subject to Subpart *ZZZZ*, you must comply with ONE of the following emission limitations at 100 percent load plus or minus 10 percent [Table 2a]:

- Reduce carbon monoxide (CO) emissions by 93 percent or more (referred to as the CO percent reduction limit); OR
- Limit the formaldehyde concentration in the stationary RICE exhaust to 14 parts per million, by volume on a dry basis (ppmvd) at 15 percent O<sub>2</sub> (referred to as the formaldehyde concentration limit).

You may meet the applicable emission limitation by using an oxidation catalyst or an alternative method of control. Whichever method of control you choose, you will have emission testing requirements; operating limits and parameter monitoring requirements; startup, shutdown, and malfunction requirements; recordkeeping requirements; and notification and reporting requirements. You will have different operating limitations and monitoring requirements depending on the method of control you choose. Refer to the summary of operating parameter and monitoring requirements under section 6.3 if you are using an oxidation catalyst and section 6.4 if you are using an alternative method of control.

## 6.2 What Are The Emission Testing Requirements?

You must conduct emission testing on new and reconstructed 4SLB engines subject to Subpart ZZZZ to show that you are meeting ONE of the applicable emission limitations (as discussed in Section 6.1). For MACT, emission tests are called “performance tests.” The following performance tests are required for Subpart ZZZZ:

- You must conduct an initial performance test for new and reconstructed 4SLB engines subject to Subpart ZZZZ (see section 6.2.2).
- You must conduct semiannual performance tests if your 4SLB stationary RICE is not equipped with a continuous emission monitor (CEM) AND you are complying with the CO percent reduction limit, or if you are complying with the formaldehyde concentration limit (see section 6.2.3).
- If you are using an oxidation catalyst, to comply with Subpart ZZZZ, you also must conduct a performance test if you change your catalyst (see section 6.2.4).

In all cases, the emission tests must be conducted according to the requirements included in Subpart ZZZZ, discussed below (see Section 6.2.1).

If you elect to install a CEMS to continuously monitor CO and either oxygen or CO<sub>2</sub>, to demonstrate compliance with the CO percent reduction limitation, you are required to conduct an initial performance evaluation and relative accuracy test audit (RATA). You are not required to conduct the performance tests specified in Table 4. Specific requirements for CEMS are presented in section 6.5.

### 6.2.1 How do I conduct my performance tests?

The following provisions apply to all performance tests:

- You must conduct the tests using the test methods and other test procedures included in Table 4 of Subpart ZZZZ. These provisions are discussed further in Sections 6.2.1.1 and 6.2.1.2 below.
- The tests must be conducted while the engine is operating at 100 percent load plus or minus 10 percent. [63.6620(b)]
- The tests must NOT be conducted during startup, shutdown, or malfunction (SSM) events (see section 6.6 of this document for details on SSM requirements) [§§63.6620(c) and 63.7(e)(1)].
- The tests must include at least three separate test runs, and each test run must last at least one hour [63.6620(d)].
- Operating parameters must be measured during the performance test (see section 6.2.2.1 for operating parameters)
- Determination of engine load must be documented, including the calculations, assumptions, and measurement devices used to measure or estimate the percent load. This information must be submitted in a written report with the performance test results (see section 6.8.4 of this document for the information that must be included in this report).

- You must record ambient temperature, pressure, and humidity for the percent load determination and include the data in a written report (see section 6.8.4 of this document for the information that must be included in this report).

#### 6.2.1.1 What performance test requirements do I have to follow if I am complying with the CO percent reduction limitation?

If you are complying with the CO percent reduction limit, you must conduct all of your performance tests using the following criteria [Table 4, item 1].

1. You must measure the O<sub>2</sub> at the inlet and outlet of the oxidation catalyst or other control device with a portable CO and O<sub>2</sub> analyzer, using ASTM D6522-00<sup>79</sup> (incorporated by reference, according to §63.14). You must make measurements to determine O<sub>2</sub> at the same time as the measurements for CO concentration.
2. You must measure the CO at the inlet and outlet of the oxidation catalyst or other control device with a portable CO and O<sub>2</sub> analyzer, using ASTM D6522-00<sup>80</sup> (incorporated by reference, according to §63.14). The CO concentration must be at 15% O<sub>2</sub>, dry basis

Determine compliance with the CO percent reduction requirement using the following set of equations [§63.6620(e)]:

$$R = \frac{C_i - C_o}{C_i} \times 100$$

Where:

- C<sub>i</sub> = concentration of CO at the oxidation catalyst or other control device inlet,  
 C<sub>o</sub> = concentration of CO at the oxidation catalyst or other control device outlet,  
 R = percent reduction of CO emissions.

You are required to normalize the CO concentration at the inlet and outlet of the oxidation catalyst or other control device to 15% O<sub>2</sub> and a dry basis, or an equivalent percent CO<sub>2</sub>. Use a CO<sub>2</sub> correction factor if CO<sub>2</sub> concentration is measured as an exhaust diluent in lieu of measuring O<sub>2</sub> concentration.

#### ***CO<sub>2</sub> correction factor:***

Step 1: Calculate the fuel-specific F<sub>o</sub> value for the fuel burned during the test.

<sup>79</sup> You may also use Methods 3A and 10 as options to ASTM–D6522–00. You may obtain a copy of ASTM–D6522–00 from at least one of the following addresses: American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428–2959, or University Microfilms International, 300 North Zeeb Road, Ann Arbor, MI 48106.

<sup>80</sup> You may also use Methods 3A and 10 as options to ASTM–D6522–00. You may obtain a copy of ASTM–D6522–00 from at least one of the following addresses: American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428–2959, or University Microfilms International, 300 North Zeeb Road, Ann Arbor, MI 48106.

$$F_o = \frac{0.209 F_d}{F_c}$$

Where:

- $F_o$  = Fuel factor based on the ratio of oxygen volume to the ultimate  $\text{CO}_2$  volume produced by the fuel at zero percent excess air.  
 $0.209$  = Fraction of air that is oxygen, percent/100.  
 $F_d$  = Ratio of the volume of dry effluent gas to the gross calorific value of the fuel from Method 19, dsm<sup>3</sup>/J (dscf/106 Btu).  
 $F_c$  = Ratio of the volume of  $\text{CO}_2$  produced to the gross calorific value of the fuel from Method 19, dsm<sup>3</sup>/J (dscf/106 Btu).

Step 2: Calculate the  $\text{CO}_2$  correction factor for correcting measurement data to 15 percent oxygen.

$$X_{\text{CO}_2} = \frac{5.9}{F_o}$$

Where:

- $X_{\text{CO}_2}$  =  $\text{CO}_2$  correction factor, percent.  
 $5.9 = 20.9 \text{ percent O}_2 - 15 \text{ percent O}_2$ , the defined  $\text{O}_2$  correction value, percent.

Step 3: Calculate the  $\text{NO}_x$  and  $\text{SO}_2$  gas concentrations adjusted to 15 percent  $\text{O}_2$  using  $\text{CO}_2$  as follows:

$$C_{\text{adj}} = C_d \frac{X_{\text{CO}_2}}{\% \text{CO}_2}$$

Where:

- $\% \text{CO}_2$  = Measured  $\text{CO}_2$  concentration measured, dry basis, percent.

#### 6.2.1.2 What performance test requirements do I have to follow if I am complying with the formaldehyde concentration limitation?

If you are complying with the requirement to limit the formaldehyde concentration you must conduct your initial and all subsequent performance tests using the following criteria [Table 4, item 3]:

1. You must select the location of the sampling port and the number of traverse points using Method 1 or 1A (40 CFR part 60, appendix A). You must choose a sampling site that is located at the outlet of the oxidation catalyst or other control device; AND
2. You must determine the  $\text{O}_2$  concentration of the 4SLB stationary RICE exhaust at the sampling port location using Method 3, 3A or 3B (40 CFR part 60, appendix A). You must take the measurements to determine the  $\text{O}_2$  concentration

at the same time and location as the measurements for the formaldehyde concentration; AND

3. You must measure the moisture content of the 4SLB stationary RICE exhaust at the sampling port location using Method 4 (40 CFR part 60, appendix A) or Method 320 (40 CFR part 63, appendix A) or ASTM D 6348-03. You must take measurements to determine the moisture content at the same time and location as the measurements for the formaldehyde concentration; AND
4. You must measure formaldehyde at the exhaust of the 4SLB stationary RICE using Method 320 or 323 (40 CFR part 60, appendix A), or ASTM D6348-03,<sup>81</sup> provided in ASTM D6348-03 Annex A5 (Analyte Spiking Technique), the percent R must be  $\geq 70$  and  $\leq 130$ . You must convert the formaldehyde concentration to 15% O<sub>2</sub>, dry basis. Results of this test consist of the average of the three 1-hr or longer runs.

### 6.2.2 Initial Performance Test

You must conduct an initial performance test for new or reconstructed 4SLB engines subject to Subpart ZZZZ to show that you are meeting either the CO percent reduction limit or the formaldehyde concentration limit. The initial performance test must be conducted using the methods and test procedures presented in Section 6.2.1.

The results of the initial performance test must show that you have reduced CO emissions by 93 percent or more or the formaldehyde concentration in your stationary RICE exhaust is less than or equal to 14 ppmvd at 15 percent O<sub>2</sub> [§63.6630(a)].

#### 6.2.2.1 Measuring Operating Parameters During the Initial Performance Test

If you use an oxidation catalyst to comply with MACT, and are NOT using a CEMS, you must record two operating parameters during the initial performance test (Table 5, items 1 and 6):

- pressure drop across the catalyst; and
- inlet temperature to the catalyst.

If you are not using an oxidation catalyst and EPA has approved your petition to establish operating limitations, you must record parameters during the initial performance test in accordance with EPA's approval of your petition to establish operating limitations (Table 5, items 2 and 7). These values will be used to establish your operating limits (see Sections 6.3 or 6.4 of this document). Note that you should not conduct the initial performance test until EPA acts on your petition [§63.6620(f)].

If you are not using an oxidation catalyst and EPA approved your petition EPA to establish NO operating limitations, you are not required to record parameters during the

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<sup>81</sup> You may obtain a copy of ASTM-D6348-03 from at least one of the following addresses: American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, or University Microfilms International, 300 North Zeeb Road, Ann Arbor, MI 48106.

initial performance test. Note that you should not conduct the initial performance test until EPA acts on your petition [§63.6620(f)].

#### 6.2.2.2 When do I have to conduct the initial performance test?

If construction/reconstruction of the new or reconstructed 4SLB stationary RICE commences after June 15, 2004, you must conduct the initial compliance test within 180 days after you start up the new or reconstructed engine [§63.6610(a)].

If you have a new or reconstructed 4SLB stationary RICE that commenced construction (or reconstruction) between December 19, 2002 and June 15, 2004, you have to conduct the initial performance test no later than February 10, 2005 or no later than 180 days after startup of your engine, whichever date is later [§63.6610(b)].

#### 6.2.2.3 When is an initial performance test not required?

You do not have to perform an initial performance test if you have conducted a performance test on your 4SLB stationary RICE that meets the following criteria:

1. The test was conducted using the same test methods specified in section 6.2.1.1 or 6.2.1.2 of this document, and you followed these methods correctly.
2. The test is not older than 2 years.
3. The test has been reviewed and accepted by EPA.
4. No process or equipment changes have been made since the test was performed, or you can demonstrate that the results of the performance test, with or without adjustments, reliably demonstrate compliance despite process or equipment changes.
5. The test was conducted at any load condition within  $\pm 10$  percent of 100 percent load.

You are also not required to conduct an initial performance test if you install a CEMS to continuously monitor CO and either O<sub>2</sub> or CO<sub>2</sub>. Instead, for each CEMS, you are required to conduct an initial performance evaluation (see section 6.5 for more details regarding the performance evaluation). You are required to conduct the initial performance evaluation for each CEMS by February 12, 2005 or within 180 days after startup, whichever is later.

#### 6.2.3 Semiannual Performance Tests

You must conduct semi-annual performance tests if:

- You are complying with the CO percent reduction limit AND your 4SLB stationary RICE is NOT equipped with a CEMS.
- You are complying with the formaldehyde concentration limit [§63.6615 and Table 3].

If you conduct two consecutive performance tests and are in compliance with the applicable emission limitation, you may conduct the subsequent performance tests on an annual basis. You must resume semi-annual tests if:

- Any subsequent performance test shows that you are not in compliance with your emission limit, or
- You deviate from any of your operating limitations [Table 3, footnote].

#### 6.2.4 Other Required Tests

If you are using a catalyst, such as an oxidation catalyst, to comply with Subpart ZZZZ, and you change the catalyst, you are required to conduct a performance test to show that you are meeting the applicable emission limitation. You must also reestablish the values of the operating parameters measured during the initial performance test [§63.6640(b)]. If you are using an oxidation catalyst to comply with MACT, you must reestablish the initial pressure drop for the catalyst and measure the inlet temperature to the catalyst during the catalyst-change performance test.

#### 6.2.5 Reports and Notification for Performance Tests

The reports and notifications required for performance tests are presented in the table below:

**Reports and Notifications for All Performance Tests**

<b>Performance Test Requirement</b>	<b>Deadline</b>
Notification of Intent to Conduct a Performance Test	60 days before test date
Site-Specific Test Plan & Submit to EPA or Delegated Authority if Submittal is Requested	60 days before test date or mutually agreed date
Contact EPA or Delegated Authority to Request Performance Audit Materials	30 days before test date
Submit Results of Performance Test with Notification of Compliance Status Report	60 days after test completion (Completion = date field sample collection is completed) OR If using CEMS, 30 days after performance evaluation completion

These reports and notifications are discussed further in Sections 6.7 and 6.8.

### **6.3 What Are The Operating Limits And Parameter Monitoring Requirements If I Am Using An Oxidation Catalyst?**

In addition to meeting emission limitations, you may also have to meet certain operating limits. The operating limits for 4SLB engines are presented in Table 2b of Subpart ZZZZ. If you choose to install a CEMS, you do not have operating limits to comply with MACT. Section 6.5 presents your requirements if you choose to install a CEMS.

It is important to note that these operating limits are enforceable independent of the emission limits – they are not triggers to assess your emissions. Instead they are separate and enforceable limits.

This section presents the operating limit and parameter monitoring requirements if you are using an oxidation catalyst to meet the applicable CO or formaldehyde emission limit. If you are not using an oxidation catalyst, section 6.4 presents the operating limit and parameter monitoring requirements for other control technologies.

The operating limits and parameter monitoring requirements are the same for both the 93-percent CO percent reduction requirement and the 14-ppmvd formaldehyde concentration requirement.

#### **6.3.1 Operating Limits for 4SLB Engines using Oxidation Catalyst to Comply with MACT**

Two operating limits apply for 4SLB engines using oxidation catalyst to comply with MACT:

- Maintain your catalyst so that the pressure drop across the catalyst does not change by more than two inches of water at 100 percent load plus or minus 10 percent from the pressure drop across the catalyst measured during the initial performance test; and
- Maintain the temperature of your engine exhaust so that the catalyst inlet temperature is greater than or equal to 450°F and less than or equal to 1350°F.

Note that you establish the initial pressure drop across the catalyst during the initial performance test. The allowable range for pressure drop is  $\pm 2''$  WC from the initial pressure drop. Also note that if you change your catalyst, you are required to reestablish the initial pressure drop for the new catalyst element.

As discussed further below, to demonstrate compliance with these operating limits, you must measure pressure drop across the catalyst monthly, and you must continuously monitor temperature at the catalyst inlet (i.e., the stationary RICE exhaust temperature at the catalyst inlet).

#### **6.3.2 Monthly Pressure Drop Measurements**

You demonstrate that you are meeting the pressure drop operating limit by measuring the pressure drop across the catalyst once a month [Table 6, items 1 and 7]. The monthly

pressure drop measurements should be taken while the engine is operating at 100% load  $\pm 10\%$ .

You are meeting the operating limit if the pressure drop measured each month is within two inches of water of the pressure drop measured during the performance test [Table 2b, item 1].

### 6.3.3 Continuous Catalyst Inlet Temperature Monitoring

You are required to install and operate a continuous parameter monitoring system (CPMS) to measure catalyst inlet temperature [Table 5, items 1 and 6]. You must collect the catalyst inlet temperature data and reduce these data to 4-hour rolling averages [Table 6, items 1 and 7].<sup>82</sup> You are meeting the oxidation catalyst inlet temperature operating limit if the 4-hour rolling average oxidation catalyst inlet temperature is greater than or equal to 450°F or less than or equal to 1,350°F [Table 2b, item 1].

### 6.3.4 Continuous Parameter Monitoring System Requirements

For each stationary RICE, you are required to install a CPMS to continuously monitor catalyst inlet temperature (Table 5, items 1 and 6). For each CPMS, you are required to follow certain operation and maintenance requirements; prepare a quality control program; and conduct performance evaluations.

#### 6.3.4.1 Operation and maintenance requirements for CPMS

There are several operation and maintenance requirements for your CPMS [§63.8(c)]:

- You must operate the CPMS at all times, including during periods of startup, shutdown, or malfunction;
- You must have the necessary parts for routine repairs of the CPMS readily available;
- You must develop a written startup, shutdown, and malfunction (SSM) plan for CPMS (see section 6.6 of this document for specific SSM plan requirements);
- The read-out (i.e., visual display or record), or some indication of operation, from your CPMS must be readily accessible for control or inspection by the equipment operator;
- You must install and have the CPMS operational and have the data verified before or at the time of the initial performance test (you verify the operational status of your CPMS by, at a minimum, completing the manufacturer's written specifications or recommendations for installation, operation and calibration of the system);
- You must operate the CPMS continuously except for system breakdowns, out-of-control periods, repairs, maintenance periods, calibration checks, and zero (low-level) and high-level calibration drift adjustments;

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<sup>82</sup> To calculate a rolling average, each hour you calculate the average catalyst inlet temperature for the current hour and the previous three hours.

- You must calibrate the CPMS prior to use;
- You must check each CPMS daily for indication that the system is responding;
- If the CPMS has an internal system check, you must record and check the results on a daily basis for proper operation;
- If you have a CPMS that is out of control,<sup>83</sup> you are required to take the necessary corrective action and repeat all necessary tests which indicate that the system is out of control. You also are required to take corrective actions and conduct retesting until the performance requirements are below the applicable limits. You may not use data recorded during periods that the CPMS is out of control in data averages or calculations.
- If you have a CPMS that is out of control,<sup>84</sup> you have to submit all information concerning out-of-control periods, including start and end dates, hours, and descriptions of your corrective actions in the semiannual compliance report (see section 6.8 of this document for more details on this report).

#### 6.3.4.2 Quality Control Program

You are required to develop and implement a quality control program for your CPMS [§63.8(d)]. The program must contain a written protocol that describes the procedures for the following operations:

- Initial and any subsequent calibration of the CPMS;
- Determination and adjustment of the calibration drift of the CPMS;
- Preventive maintenance of the CPMS, including spare parts inventory;
- Data recording, calculations, and reporting;
- Accuracy audit procedures, including sampling and analysis methods; and
- Program of corrective action for a malfunctioning CPMS.

You are required to maintain these written procedures on record for the life of the stationary RICE or until your stationary RICE is no longer subject to the RICE MACT. If appropriate, you may incorporate these written procedures as part of your SSM plan to avoid duplicating planning and recordkeeping efforts.

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<sup>83</sup> Your CPMS is considered out of control if: (1) the zero (low-level), mid-level (if applicable), or high-level calibration drift (CD) exceeds two times the applicable CD specification in the performance standard; or (2) the CPMS fails a performance test audit (e.g., cylinder gas audit), relative accuracy audit, relative accuracy test audit, or linearity test audit. The beginning of the out-of-control period is the hour you conduct a performance check (e.g., CD) that indicates an exceedance of the established performance requirements. The end of the out-of-control period is the hour following the completion of the corrective action and successful demonstration that the system is within the allowable limits.

<sup>84</sup> Your CPMS is considered out of control if: (1) the zero (low-level), mid-level (if applicable), or high-level calibration drift (CD) exceeds two times the applicable CD specification in the performance standard; or (2) the CPMS fails a performance test audit (e.g., cylinder gas audit), relative accuracy audit, relative accuracy test audit, or linearity test audit. The beginning of the out-of-control period is the hour you conduct a performance check (e.g., CD) that indicates an exceedance of the established performance requirements. The end of the out-of-control period is the hour following the completion of the corrective action and successful demonstration that the system is within the allowable limits.

#### 6.3.4.3 Performance Evaluation

You are required to conduct a performance evaluation for each CPMS [§63.8(e)]. You must conduct the performance evaluation on your CPMS during the initial performance test required under the RICE MACT. You are required to notify the Administrator in writing of the date that you are going to conduct your performance evaluation at the same time as the notification to conduct your performance test.

Before conducting the performance evaluation, you must prepare a site-specific performance evaluation test plan. The following elements must be included in the test plan:

- the evaluation program objectives;
- an evaluation program summary;
- the performance evaluation schedule;
- data quality objectives (the pre-evaluation expectations of precision, accuracy, and completeness of data);
- an internal QA program, which must include, at a minimum, the activities planned by routine operators and analysts to provide an assessment of CPMS performance; and
- an external QA program which must include, at a minimum, systems audits that include the opportunity for on-site evaluation by the Administrator of instrument calibration, data validation, sample logging, and documentation of quality control data and field maintenance activities.

You must submit the performance evaluation test plan ONLY if requested by EPA or the delegated authority. If requested, the site-specific performance evaluation test plan must be submitted at least 60 days before the performance test or performance evaluation is scheduled to begin, or on a mutually agreed upon date. The Administrator will review and approve the performance evaluation test plan at the same time as the review and approval of the site-specific test plan (if review of the site-specific test plan is requested). The Administrator may request additional relevant information after the submittal of a site-specific performance evaluation test plan.

If the Administrator fails to approve or disapprove the site-specific performance evaluation test plan within the 30 calendar days after receipt of the test plan, the following conditions apply:

- If you intend to demonstrate compliance using the monitoring method(s) specified in the RICE MACT, you are required to conduct the performance evaluation at the same time as the performance test using the specified method(s);
- If you intend to demonstrate compliance by using an alternative monitoring method, you must not conduct the performance evaluation until the Administrator approves the use of the alternative method. If the Administrator does not approve the alternative method within 30 days before the performance evaluation is scheduled to begin, the performance evaluation deadlines may be extended such that you must conduct the performance evaluation within 60 calendar days after the Administrator approves the use of the alternative method. You may proceed to

conduct the performance evaluation (without the Administrator's prior approval of the site-specific performance evaluation test plan) if you subsequently choose to use the specified monitoring method(s) instead of an alternative.

## **6.4 What are the Operating Limits and Parameter Monitoring Requirements If I am not Using Oxidation Catalyst?**

If you choose to meet the CO or formaldehyde emission limits using a control technique other than oxidation catalyst, you are required to petition the Administrator for approval of operating limitations to be established during the initial performance test. If you feel that no operating limits are appropriate for your technology, you may also petition the Administrator for approval of no operating limitations. Your petition has to receive approval from the Administrator before you can conduct your initial performance test [§63.6620(f)].

### **6.4.1 Petition for Approval of Operating Limitations**

If you petition the Administrator for approval of operating limitations, the petition must contain the following information [§63.6620(g)]:

- You must identify the specific parameters you propose to use as operating limitations;
- You must provide a discussion of the relationship between these parameters and HAP emissions, identifying how HAP emissions change with changes in these parameters, and how limitations on these parameters will serve to limit HAP emissions;
- You must provide a discussion of how you will establish the upper and/or lower values for these parameters which will establish the limits on these parameters in the operating limitations;
- You must provide a discussion identifying the methods you will use to measure and the instruments you will use to monitor these parameters, as well as the relative accuracy and precision of these methods and instruments; and
- You must provide a discussion identifying the frequency and methods for recalibrating the instruments you will use for monitoring these parameters.

### **6.4.2 Petition for Approval of No Operating Limitations**

If you petition the Administrator for approval of no operating limitations, your petition must include the following information [§63.6620(h)]:

- You must identify the parameters associated with operation of the stationary RICE and the emission control device which could change intentionally (e.g., operator adjustment, automatic controller adjustment, etc.) or unintentionally (e.g., wear and tear, error, etc.) on a routine basis or over time;
- You must provide a discussion of the relationship, if any, between changes in the parameters and changes in HAP emissions;
- For the parameters which could change in such a way as to increase HAP emissions, you must provide a discussion of whether establishing limitations on the parameters would serve to limit HAP emissions;
- For the parameters which could change in such a way as to increase HAP emissions, you must provide a discussion of how you could establish upper and/or

lower values for the parameters which would establish limits on the parameters in operating limitations;

- For the parameters which could change in such a way as to increase HAP emissions, you must provide a discussion identifying the methods you could use to measure them and the instruments you could use to monitor them, as well as the relative accuracy and precision of the methods and instruments;
- For the parameters which could change in such a way as to increase HAP emissions, you must provide a discussion identifying the frequency and methods for recalibrating the instruments you could use to monitor them; and
- You must provide a discussion of why, from your point of view, it is infeasible or unreasonable to adopt the parameters as operating limitations.

#### 6.4.3 Continuous Parameter Monitoring System Requirements

If you have petitioned the Administrator for operating limitations, for each stationary RICE you are required to install a continuous parameter monitoring system (CPMS) to continuously monitor your approved operating parameters. For each CPMS, you are required to follow certain operation and maintenance requirements; prepare a quality control program; and conduct performance evaluations.

##### 6.4.3.1 Operation and maintenance requirements for CPMS

There are several operation and maintenance requirements for operation of your CPMS [§63.8(c)]:

- You must operate the CPMS at all times, including during periods of startup, shutdown, or malfunction;
- You must have the necessary parts for routine repairs of the CPMS readily available;
- You must develop a written startup, shutdown, and malfunction (SSM) plan for CPMS (see section 6.6 of this document for specific SSM plan requirements);
- The read-out (i.e., visual display or record), or some indication of operation, from your CPMS must be readily accessible for control or inspection by the equipment operator;
- You must install and have the CPMS operational and have the data verified before or at the time of the initial performance test (you verify the operational status of your CPMS by, at a minimum, completing the manufacturer's written specifications or recommendations for installation, operation and calibration of the system);
- You must operate the CPMS continuously except for system breakdowns, out-of-control periods, repairs, maintenance periods, calibration checks, and zero (low-level) and high-level calibration drift adjustments;
- You must calibrate the CPMS prior to use;
- You must check each CPMS daily for indication that the system is responding;
- If the CPMS has an internal system check, you must record and check the results on a daily basis for proper operation;

- If you have a CPMS that is out of control,<sup>85</sup> you are required to take the necessary corrective action and repeat all necessary tests which indicate that the system is out of control. You also are required to take corrective actions and conduct retesting until the performance requirements are below the applicable limits. You may not use data recorded during periods that the CPMS is out of control in data averages or calculations.
- If you have a CPMS that is out of control,<sup>86</sup> you have to submit all information concerning out-of-control periods, including start and end dates, hours, and descriptions of your corrective actions in the semiannual compliance report (see section 6.8 of this document for more details on this report).

#### 6.4.3.2 Quality Control Program

You are required to develop and implement a quality control program for your CPMS [§63.8(d)]. The program must contain a written protocol that describes the procedures for the following operations:

- Initial and any subsequent calibration of the CPMS;
- Determination and adjustment of the calibration drift of the CPMS;
- Preventive maintenance of the CPMS, including spare parts inventory;
- Data recording, calculations, and reporting;
- Accuracy audit procedures, including sampling and analysis methods; and
- Program of corrective action for a malfunctioning CPMS.

You are required to maintain these written procedures on record for the life of the stationary RICE or until your stationary RICE is no longer subject to the RICE MACT. If appropriate, you may incorporate these written procedures as part of your SSM plan to avoid duplicating planning and recordkeeping efforts.

#### 6.4.3.3 Performance Evaluation

You are required to conduct a performance evaluation for each CPMS [§63.8(e)]. You must conduct the performance evaluation on your CPMS during the initial performance test required under the RICE MACT. You are required to notify the Administrator in

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<sup>85</sup> Your CPMS is considered out of control if: (1) the zero (low-level), mid-level (if applicable), or high-level calibration drift (CD) exceeds two times the applicable CD specification in the performance standard; or (2) the CPMS fails a performance test audit (e.g., cylinder gas audit), relative accuracy audit, relative accuracy test audit, or linearity test audit. The beginning of the out-of-control period is the hour you conduct a performance check (e.g., CD) that indicates an exceedance of the established performance requirements. The end of the out-of-control period is the hour following the completion of the corrective action and successful demonstration that the system is within the allowable limits.

<sup>86</sup> Your CPMS is considered out of control if: (1) the zero (low-level), mid-level (if applicable), or high-level calibration drift (CD) exceeds two times the applicable CD specification in the performance standard; or (2) the CPMS fails a performance test audit (e.g., cylinder gas audit), relative accuracy audit, relative accuracy test audit, or linearity test audit. The beginning of the out-of-control period is the hour you conduct a performance check (e.g., CD) that indicates an exceedance of the established performance requirements. The end of the out-of-control period is the hour following the completion of the corrective action and successful demonstration that the system is within the allowable limits.

writing of the date that you are going to conduct your performance evaluation at the same time you submit the notification to conduct your performance test. If you are not conducting a performance test, the performance evaluation notification must be submitted at least 60 days prior to the date that you are scheduled to begin the performance evaluation.

Before conducting the performance evaluation, you may be required to develop and submit a site-specific performance evaluation test plan to the Administrator for approval. The following elements must be included in the test plan:

- the evaluation program objectives;
- an evaluation program summary;
- the performance evaluation schedule;
- data quality objectives (the pre-evaluation expectations of precision, accuracy, and completeness of data);
- an internal QA program, which must include, at a minimum, the activities planned by routine operators and analysts to provide an assessment of CMS performance; and
- an external QA program which must include, at a minimum, systems audits that include the opportunity for on-site evaluation by the Administrator of instrument calibration, data validation, sample logging, and documentation of quality control data and field maintenance activities.

If the Administrator requests that you submit a site-specific performance evaluation test plan for approval, it is due at least 60 days before the performance test or performance evaluation is scheduled to begin, or on a mutually agreed upon date. The Administrator will review and approve the performance evaluation test plan at the same time as the review and approval of the site-specific test plan (if review of the site-specific test plan is requested). The Administrator may request additional relevant information after the submittal of a site-specific performance evaluation test plan.

If the Administrator fails to approve or disapprove the site-specific performance evaluation test plan within the 30 calendar days after receipt of the test plan, the following conditions apply:

- If you intend to demonstrate compliance using the monitoring method(s) specified in the RICE MACT, you are required to conduct the performance evaluation at the same time as the performance test using the specified method(s);
- If you intend to demonstrate compliance by using an alternative monitoring method, you must not conduct the performance evaluation until the Administrator approves the use of the alternative method. If the Administrator does not approve the alternative method within 30 days before the performance evaluation is scheduled to begin, the performance evaluation deadlines may be extended such that you must conduct the performance evaluation within 60 calendar days after the Administrator approves the use of the alternative method. You may proceed to conduct the performance evaluation (without the Administrator's prior approval of the site-specific performance evaluation test plan) if you subsequently chooses to use the specified monitoring method(s) instead of an alternative.

#### 6.4.4 Requirements for Approved Operating Limits

You are required to install and operate a CPMS to measure your approved operating limit [Table 5, items 2 and 7]. You must collect the parameter data you approved by the Administrator and reduce these data to 4-hour rolling averages [Table 6, items 2 and 8].<sup>87</sup> You are meeting the approved operating limit if the 4-hour rolling average parameter data is within your approved operating limitations for the operating parameters established during the initial performance test.

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<sup>87</sup> To calculate a rolling average, each hour you calculate the average NSCR inlet temperature for the current hour and the previous three hours.

## 6.5 What are the Monitoring Requirements If I am using a CEMS?

If you are complying with the CO percent reduction emission limitation, you have the option of installing a CEMS to demonstrate that you are reducing CO by 93 percent or more. You may choose this option for any control technique. You must install a CEMS to continuously monitor CO and either oxygen or CO<sub>2</sub> at both the inlet and outlet of the control device according to the following [§63.6625(a)]:

- You must install, operate and maintain each CEMS as specified in performance specifications (PS) 3 and 4A of 40 CFR part 60, appendix B.
- You must conduct an initial performance evaluation and an annual relative accuracy test audit (RATA) according to §63.8 and PS 3 and 4 (40 CFR part 60, appendix B).
- You must conduct daily and periodic data quality checks specified in 40 CFR part 60, appendix F, procedure 1.
- You must install the CEMS such that a minimum of one cycle of operation (sampling, analyzing, and data recording) is completed for each successive 15-minute period. There must be two data points, with each representing a different 15-minute period, to have a valid hour of data.
- You must reduce the CEMS data to 1-hour averages computed from four or more data points equally spaced over each 1-hour period, except during periods when calibration, quality assurance, or maintenance activities are being performed. During these periods, an hourly average is considered valid if you have at least two data points, each representing a 15-minute period. NOTE: You may also use an arithmetic or integrated 1-hour average of CEMS data.
- You must also keep records of the reduced data in parts per million at 15 percent oxygen or the equivalent CO<sub>2</sub> concentration.

### 6.5.1 Initial Performance Evaluation Requirements

For each CEMS, you must conduct an initial performance evaluation and an initial RATA using the procedures specified in §63.8 and PS 3 (for oxygen or CO<sub>2</sub>) and 4A (for CO) of 40 CFR part 60, appendix B. You are not required to conduct the performance tests specified in Table 4. The initial performance evaluation must be conducted by February 12, 2005 or within 180 days after startup of your new or reconstructed stationary RICE, whichever date is later.

Once the performance evaluation has been completed you must calculate the average CO percent reduction. This calculation is based on the first four hours of monitoring data collected once the CEMS has been successfully validated [Table 5, item 3.a.iii].

Determine compliance with the CO percent reduction requirement using the following set of equations [§63.6620(e)]:

$$R = \frac{C_i - C_o}{C_i} \times 100$$

Where:

- $C_i$  = concentration of CO at the oxidation catalyst or other control device inlet,  
 $C_o$  = concentration of CO at the oxidation catalyst or other control device outlet,  
 $R$  = percent reduction of CO emissions.

You are required to normalize the CO concentration at the inlet and outlet of the oxidation catalyst or other control device to 15% O<sub>2</sub> and a dry basis, or an equivalent percent CO<sub>2</sub>. Use a CO<sub>2</sub> correction factor if CO<sub>2</sub> concentration is measured as an exhaust diluent in lieu of measuring O<sub>2</sub> concentration.

***CO<sub>2</sub> correction factor:***

Step 1: Calculate the fuel-specific  $F_o$  value for the fuel burned during the test.

$$F_o = \frac{0.209 F_d}{F_c}$$

Where:

- $F_o$  = Fuel factor based on the ratio of oxygen volume to the ultimate CO<sub>2</sub> volume produced by the fuel at zero percent excess air.  
0.209 = Fraction of air that is oxygen, percent/100.  
 $F_d$  = Ratio of the volume of dry effluent gas to the gross calorific value of the fuel from Method 19, dsm<sup>3</sup>/J (dscf/106 Btu).  
 $F_c$  = Ratio of the volume of CO<sub>2</sub> produced to the gross calorific value of the fuel from Method 19, dsm<sup>3</sup>/J (dscf/106 Btu).

Step 2: Calculate the CO<sub>2</sub> correction factor for correcting measurement data to 15 percent oxygen.

$$X_{CO_2} = \frac{5.9}{F_o}$$

Where:

- $X_{CO_2}$  = CO<sub>2</sub> correction factor, percent.  
5.9 = 20.9 percent O<sub>2</sub> - 15 percent O<sub>2</sub>, the defined O<sub>2</sub> correction value, percent.

Step 3: Calculate the NO<sub>x</sub> and SO<sub>2</sub> gas concentrations adjusted to 15 percent O<sub>2</sub> using CO<sub>2</sub> as follows:

$$C_{adj} = C_d \frac{X_{CO_2}}{\%CO_2}$$

Where:

%CO<sub>2</sub> = Measured CO<sub>2</sub> concentration measured, dry basis, percent.

### 6.5.2 Additional Requirements

You are required to conduct annual RATA of each CEMS using PS 3 (for oxygen or CO<sub>2</sub>) and PS 4A (for CO) [40 CFR part 60, appendix B], as well as the daily and periodic data quality checks specified in 40 CFR part 60, appendix F, procedure 1.

You must collect monitoring data (see section 6.5.3 for specific monitoring installation, operation, and maintenance requirements) and reduce the measurements to one-hour averages and calculate the percent reduction of CO emissions using the formulas presented in section 6.5.1. You must collect the one-hour average CO percent reduction data and reduce these data to 4-hour rolling averages [Table 6, item 3].<sup>88</sup> You are meeting the CO percent reduction emission limit if the 4-hour rolling average CO percent reduction is greater than or equal to 93 percent.

### 6.5.3 Continuous Emission Monitoring System Requirements

For each CEMS, you are required to follow certain operation and maintenance requirements; prepare a quality control program; and conduct performance evaluations.

#### 6.5.3.1 Operation and maintenance requirements for CEMS

There are several operation and maintenance requirements for your CEMS [§63.8(c)]:

- You must operate the CEMS at all times, including during periods of startup, shutdown, or malfunction;
- You must have the necessary parts for routine repairs of the CEMS readily available;
- You must develop a written startup, shutdown, and malfunction (SSM) plan for CEMS (see section 6.6 of this document for specific SSM plan requirements);
- The read-out (i.e., visual display or record), or some indication of operation, from your CEMS must be readily accessible for control or inspection by the equipment operator;
- You must install and have the CEMS operational and have the data verified either prior to or during the initial performance evaluation (you verify the operational status of your CEMS by, at a minimum, completing the manufacturer's written specifications or recommendations for installation, operation and calibration of the system);
- You must operate the CEMS continuously except for system breakdowns, out-of-control periods, repairs, maintenance periods, calibration checks, and zero (low-level) and high-level calibration drift adjustments;
- Each CEMS must complete a minimum of one cycle of operation (i.e., sampling, analyzing, and data recording) for each successive 15-minute period;

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<sup>88</sup> To calculate a rolling average, each hour you calculate the average CO percent reduction for the current hour and the previous three hours.

- You must check the zero (low-level) and high-level calibration drifts of each CEMS installed according to PS 3 (for oxygen or CO<sub>2</sub>) or PS 4A (for CO) at least once daily according to your performance evaluation plan (see section 6.5.1.3). You must adjust the zero (low-level) and high-level calibration drifts, at a minimum, whenever the 24-hour zero (low-level) drift exceeds two times the limits specified in the PS. The system must allow the amount of excess zero (low-level) and high-level drift measured at the 24-hour interval checks to be recorded and quantified whenever specified.
- If you have a CEMS that is out of control,<sup>89</sup> you are required to take the necessary corrective action and repeat all necessary tests which indicate that the system is out of control. You also are required to take corrective actions and conduct retesting until the performance requirements are below the applicable limits. You may not use data recorded during periods that the CEMS is out of control in data averages or calculations.
- If you have a CEMS that is out of control,<sup>90</sup> you have to submit all information concerning out-of-control periods, including start and end dates, hours, and descriptions of your corrective actions in the semiannual compliance report (see section 6.8 of this document for more details on this report).

#### 6.5.3.2 Quality Control Program

You are required to develop and implement a quality control program for your CEMS [§63.8(d)]. The program must contain a written protocol that describes the procedures for the following operations:

- Initial and any subsequent calibration of the CEMS;
- Determination and adjustment of the calibration drift of the CEMS;
- Preventive maintenance of the CEMS, including spare parts inventory;
- Data recording, calculations, and reporting;
- Accuracy audit procedures, including sampling and analysis methods; and
- Program of corrective action for a malfunctioning CEMS.

You are required to maintain these written procedures on record for the life of the stationary RICE or until your stationary RICE is no longer subject to the RICE MACT. If appropriate, you may incorporate these written procedures as part of your SSM plan to avoid duplicating planning and recordkeeping efforts.

#### 6.5.3.3 Performance Evaluation

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<sup>89</sup> Your CEMS is considered out of control if: (1) the zero (low-level), mid-level (if applicable), or high-level calibration drift (CD) exceeds two times the applicable CD specification in PS 3 or 4A (40 CFR part 60, appendix B; or (2) the CEMS fails a performance test audit (e.g., cylinder gas audit), relative accuracy audit, relative accuracy test audit, or linearity test audit. The beginning of the out-of-control period is the hour you conduct a performance check (e.g., CD) that indicates an exceedance of the established performance requirements. The end of the out-of-control period is the hour following the completion of the corrective action and successful demonstration that the system is within the allowable limits.

<sup>90</sup> See footnote 73.

You are required to conduct a performance evaluation for each CEMS [§63.8(e)]. You must conduct this performance evaluation by February 12, 2005 or within 180 days after startup, whichever is later. You are required to notify the Administrator in writing of the date that you are going to conduct your performance evaluation at least 60 days before the performance evaluation is scheduled to begin.

Before conducting the performance evaluation, you must prepare a site-specific performance evaluation test plan. The following elements must be included in the test plan:

- the evaluation program objectives;
- an evaluation program summary;
- the performance evaluation schedule;
- data quality objectives (the pre-evaluation expectations of precision, accuracy, and completeness of data);
- an internal QA program, which must include, at a minimum, the activities planned by routine operators and analysts to provide an assessment of CEMS performance; and
- an external QA program which must include, at a minimum, systems audits that include the opportunity for on-site evaluation by the Administrator of instrument calibration, data validation, sample logging, and documentation of quality control data and field maintenance activities.

You must submit the performance evaluation test plan ONLY if requested by EPA or the delegated authority. If requested, the site-specific performance evaluation test plan must be submitted at least 60 days before the performance evaluation is scheduled to begin, or on a mutually agreed upon date. The Administrator will review and approve the performance evaluation test plan. The Administrator may request additional relevant information after the submittal of a site-specific performance evaluation test plan.

If the Administrator fails to approve or disapprove the site-specific performance evaluation test plan within the 30 calendar days after receipt of the test plan, the following conditions apply:

- If you intend to demonstrate compliance using the monitoring method(s) specified in the RICE MACT, you are required to conduct the performance evaluation using the specified method(s);
- If you intend to demonstrate compliance by using an alternative monitoring method, you must not conduct the performance evaluation until the Administrator approves the use of the alternative method. If the Administrator does not approve the alternative method within 30 days before the performance evaluation is scheduled to begin, the performance evaluation deadlines may be extended such that you must conduct the performance evaluation within 60 calendar days after the Administrator approves the use of the alternative method. You may proceed to conduct the performance evaluation (without the Administrator's prior approval of the site-specific performance evaluation test plan) if you subsequently choose to use the specified monitoring method(s) instead of an alternative.

## **6.6 What are the Startup, Shutdown, and Malfunction (SSM) Requirements?**

You are required to operate your oxidation catalyst or other control device as well as any CPMS or CEMS at all times, including periods of startup, shutdown, and malfunction (SSM), in a safe manner and according to good air pollution control practices to minimize emissions.

A startup is defined as “the setting in operation of an affected source or portion of an affected source for any purpose.” [§63.2]

A shutdown is defined as “the cessation of operation of an affected source or portion of an affected source for any purpose.” [§63.2]

A malfunction is defined as “any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.” [§63.2]

### **6.6.1 What are my requirements during SSM events?**

You are responsible for reducing emissions to the greatest extent possible and maintain safety and good air control practices whenever there is a period of SSM. This does not mean that you are required to achieve the emission levels required under the RICE MACT during SSM events if it means that you would not be operating in a safe manner and with good air pollution practices nor are you required to make any further efforts to reduce emissions if you are meeting the emission levels required by the RICE MACT.

### **6.6.2 Startup, Shutdown and Malfunction Plan**

You are required to develop and implement a written startup, shutdown, and malfunction (SSM) plan that describes, in detail, procedures for operating and maintaining the each stationary RICE during periods of SSM, and a program of corrective action for malfunctioning process and air pollution control and monitoring equipment (i.e., oxidation catalyst or other control device, pressure drop monitoring equipment, and CPMS or CEMS). You must develop this plan by August 16, 2004 if construction or reconstruction of your new or reconstructed stationary RICE commenced on or after December 19, 2002 but before August 16, 2004. If construction or reconstruction of your new or reconstructed stationary RICE began after August 16, 2004, you must have your SSM plan developed by startup [§63.6(e)(3)(i)].

During periods of SSM, you must operate and maintain your stationary RICE (including each oxidation catalyst or other control device and monitoring equipment) in accordance with the procedures specified in your SSM plan [§63.6(e)(3)(ii)].

#### 6.6.2.1 What must be included in my SSM plan?

EPA does not specify the required elements of a SSM plan, but the SSM plan must address the following [§63.6(e)(3)(i)(A) through (C)]:

1. Ensure that, at all times, you operate and maintain each stationary RICE, including your oxidation catalyst or other control device and monitoring equipment, in a manner which satisfies your general duty to minimize emissions;
2. Ensure that you are prepared to correct malfunctions as soon as practicable after their occurrence in order to minimize excess emissions of hazardous air pollutants; and
3. Reduce the reporting burden associated with periods of startup, shutdown, and malfunction (including corrective action taken to restore malfunctioning process and air pollution control equipment to its normal or usual manner of operation).

To develop your SSM plan, you may use your standard operating procedures (SOP) manual, or an Occupational Safety and Health Administration (OSHA) or other plan, provided the alternative plans meet the SSM plan requirements and are made available for inspection or submitted when requested by EPA or the delegated authority [§63.6(e)(3)(vi)].

#### 6.6.2.2 When may the SSM plan be revised?

You may periodically revise the SSM plan for your stationary RICE as necessary to satisfy the requirements of 40 CFR part 63 or to reflect changes in equipment or procedures at the affected source. Unless EPA or your permitting authority provides otherwise, you may make such revisions to the startup, shutdown, and malfunction plan without prior approval by EPA or the permitting authority [§63.6(e)(3)(viii)]. However, each revision to a SSM plan must be reported in the semiannual compliance report (see section 6.8.6).

If the SSM plan fails to address or inadequately addresses an event that meets the characteristics of a malfunction but was not included in the SSM plan at the time you developed the plan, you must revise the SSM plan within 45 days after the event to include detailed procedures for operating and maintaining the source during similar malfunction events and a program of corrective action for similar malfunctions of process or air pollution control and monitoring equipment [§63.6(e)(3)(viii)].

In the event that you make any revision to the SSM plan which alters the scope of the activities which are deemed to be an SSM, or otherwise modify the applicability of any emission limit or other RICE MACT requirement, the revised plan may not take effect until after you have provided a written notice describing the revision to your permitting authority [§63.6(e)(3)(viii)].

If EPA or the delegated authority determines that you are not operating and maintaining your stationary RICE (including the oxidation catalyst or other control device and monitoring equipment) in such a way that is consistent with safety and good air pollution control practices [§63.6(e)(1)(i)], EPA or the delegated authority may require you to make changes to the SSM plan for that stationary RICE. EPA or the delegated authority must require appropriate revisions to a SSM plan, if EPA or the delegated authority finds that the plan [§63.6(e)(3)(vii)]:

- Does not address a SSM event that has occurred;
- Fails to provide for the operation of the stationary RICE (including the oxidation catalyst or other control device and monitoring equipment) during a SSM event in a manner consistent with the general duty to minimize emissions established by §63.6(e)(1)(i);
- Does not provide adequate procedures for correcting malfunctioning process and/or air pollution control and monitoring equipment as quickly as practicable; or
- Includes an event that does not meet the definition of startup, shutdown, or malfunction listed in §63.2.

The title V permit for a stationary RICE must require that you adopt a SSM plan which conforms to part 63, and that you operate and maintain the stationary in accordance with the procedures specified in the current SSM plan. However, any revisions made to the SSM plan as specified above do not constitute permit revisions under part 70 or part 71 of this chapter. Moreover, none of the procedures specified by the SSM plan for an affected source shall be deemed to fall within the permit shield provision in section 504(f) of the Act [§63.6(e)(3)(ix)].

#### **6.6.2.3      What are my requirements for maintaining my SSM plan?**

You must maintain a current SSM plan and must make the plan available upon request for inspection and copying by the EPA or delegated authority. In addition, if you subsequently revise your SSM plan (see section 6.6.2.2), you must keep each previous (i.e., superseded) version of the SSM plan, and must make each such previous version available for inspection and copying by the EPA or the delegated authority for 5 years after revision of the plan. If at any time after adoption of an SSM plan the stationary RICE ceases operation or is otherwise no longer subject to the RICE MACT, you must keep a copy of the most recent plan for 5 years from the date the stationary RICE ceases operation or is no longer subject the RICE MACT and must make the plan available upon request for inspection and copying by EPA or the delegated authority [§63.6(e)(3)(v)].

EPA or the delegated authority may at any time request in writing that you submit a copy of any SSM plan (or a portion thereof). Upon receipt of such a request, you must promptly submit a copy of the requested plan (or a portion thereof) to EPA or the delegated authority. EPA or the delegated authority must request that you submit a particular SSM plan (or a portion thereof) whenever a member of the public submits a specific and reasonable request to examine or to receive a copy of that plan or portion of a plan. You may elect to submit the required copy of any SSM plan in an electronic

format. If you claim that any portion of such a SSM plan is confidential business information entitled to protection from disclosure under section 114(c) of the Act or 40 CFR 2.301, the material which is claimed as confidential must be clearly designated in the submission. [§63.6(e)(3)(v)]

### 6.6.3 How do I demonstrate I am following my SSM plan?

When you take actions during a period of SSM (including actions taken to correct a malfunction) that are consistent with the procedures specified in the SSM plan developed for your stationary RICE, you must do the following [§63.6(e)(iii)]:

- You must keep records for that event which demonstrate that the procedures specified in the plan were followed. These records may take the form of a “checklist,” or other form of recordkeeping that confirms that you followed the procedures defined in your SSM plan for that event.
- You must keep the following records of these events [§63.10(b)(2)]:
  - Records of the occurrence and duration of each startup, shutdown, or malfunction of operation
  - Records of the occurrence and duration of each malfunction of the oxidation catalyst or other control device and monitoring equipment
- You must confirm that actions taken during the relevant reporting period during periods of SSM were consistent with the startup, shutdown and malfunction plan developed for each stationary RICE in the semiannual (or more frequent) startup, shutdown, and malfunction report required in §63.10(d)(5). Note that this information may also be incorporated into your semiannual compliance report (see section 6.8.6).

If you take an action during a startup, shutdown, or malfunction (including an action taken to correct a malfunction) that is not consistent with the procedures specified in your stationary RICE's startup, shutdown, and malfunction plan, and the stationary RICE exceeds the applicable emission limitation, then you must record the actions taken for that event and must report such actions within 2 working days after commencing actions inconsistent with the plan, followed by a letter within 7 working days after the end of the event, in accordance with §63.10(d)(5) (unless the owner or operator makes alternative reporting arrangements, in advance, with the Administrator) [§63.6(e)(3)(iv)].

## **6.7 What Records Must I Keep?**

You are required to keep records of activities required to meet the final RICE MACT. You must keep files of all information (including reports and notifications) required under the RICE MACT in a format suitable and readily available for “expeditious inspection and review [§63.6660(a)].” You must maintain these records for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record [§63.6660(b)]. Records may be kept in hard copy or electronic form. You may retain at least 2 years of records on-site. You can keep records off-site for the remaining 3 years [§63.6660(c)].

### **6.7.1 Recordkeeping Requirements for Notifications and Reports**

You are required to keep a copy of each notification and report that you have submitted as a part of complying with the RICE MACT, including all documentation supporting any notification or report [§63.6655(a)(1)]. You must maintain records of the following notifications and reports (see section 6.8 of this document for details regarding these notifications and reports):

- Initial Notification;
- Notifications of performance tests;
- Site-specific test plan;
- Notification of performance evaluation for continuous monitoring systems (CMS), including both CPMS and CEMS;
- Site-specific performance evaluation plan(s);
- Any request to use an alternative monitoring procedure;
- Any request for extension of compliance;
- Notification that your source is subject to special compliance requirements;
- Notification of compliance status, including performance test results and written report to document engine load conditions during the test;
- Semiannual compliance reports; and
- Startup, shutdown, and malfunction reports.

### **6.7.2 Recordkeeping Requirements for Startup, Shutdown, and Malfunction Events**

You are required to keep records related to startup, shutdown and malfunction (SSM) events as follows (see section 6.6 for details on SSM events) [§§63.6655(a)(2) and 63.6(e)(3)(iii) through (v)]:

- When you take actions during an SSM event (including actions taken to correct a malfunction), that are consistent with the procedures specified your SSM plan, you must keep records which demonstrate that the procedures specified in the plan were followed. You may keep records in the form of a “checklist,” or you may choose another form of recordkeeping that documents that you have followed your SSM plan for that event.

- You must keep records of these SSM events, including records of the occurrence and duration of each startup, shutdown, or malfunction of operation and each malfunction of the air pollution control and monitoring equipment.
- When you take actions during an SSM event that are not consistent with the procedures specified in the your SSM plan, and the stationary RICE exceeds the formaldehyde emission limitations, then you must record the actions taken for that event.
- You must maintain a current SSM plan and must make the plan available upon request for inspection and copying by the Administrator. If you make revisions to your SSM plan, you are required to keep a copy of each previous (i.e., superseded) version of the SSM plan for 5 years after each revision. Previous versions must be available for inspection and copying by the Administrator.
- If at any time after adoption of a SSM plan stationary RICE ceases operation or is otherwise no longer subject to the RICE MACT, you must retain a copy of the most recent plan for 5 years from the date the stationary RICE ceases operation or is no longer subject to the RICE MACT. This plan must be available upon request for inspection and copying by the Administrator.
- The Administrator may request in writing that you submit a copy of any SSM plan (or portion of the plan). Upon receipt of such a request, you must promptly submit a copy of the requested plan (or portion of the plan) to the Administrator. The Administrator is required to request that you submit a particular SSM plan (or a portion thereof) whenever a member of the public submits a specific and reasonable request to examine or to receive a copy of that plan or portion of a plan. You may elect to submit the required copy of any SSM plan to the Administrator in an electronic format. If you claim that any portion of such a SSM plan is confidential business information entitled to protection from disclosure under section 114(c) of the Act or 40 CFR 2.301, the material which is claimed as confidential must be clearly designated in the submission.

### 6.7.3 Recordkeeping Requirements for Performance Tests and CMS

You are required to keep records of all performance test and performance evaluation results. Performance test results may include analysis of samples, determination of emissions, and raw data [§§63.6655(b) and 63.10(b)(2)(viii)].

For each CMS (this includes CPMS and CEMS), you are required to keep the following records [§§63.6655(b) and 63.10(b)(2)(vi) through (xi)]:

- All CMS performance evaluations;
- Records of each period during which the CMS is malfunctioning or inoperative (including periods where the CMS is out of control);
- All required measurements needed to demonstrate compliance with the operating limitations or the CO percent reduction emission limitation (including, but not limited to, 15-minute averages of CPMS data, raw performance testing measurements, and raw performance evaluation measurements, that support data that you are required to report);

- For each CEMS that is automated<sup>91</sup> and where the calculated data averages do not exclude periods of CEMS breakdowns or malfunction, rather than maintain a file of all CEMS subhourly measurements, you must retain the most recent consecutive three averaging periods of subhourly measurements and a file that contains a hard copy of the data acquisition system algorithm used to reduce the measured data into the reportable form of the standard.
- For each CEMS where measured data is manually reduced to the form of the emission limit, and where calculated data averages do not exclude periods of CEMS breakdowns or malfunctions, rather than maintain a file of all CEMS subhourly measurements, you must retain all subhourly measurements for the most recent reporting period. You must retain the subhourly measurements for 120 days from the date of the most recent semiannual compliance report submitted to EPA.
- EPA or the delegated authority MAY require you to maintain all subhourly records if it is determined that these records are required to more accurately assess the compliance status of your stationary RICE. You will be notified of this requirement
- All measurements as may be necessary to determine the conditions of performance tests and performance evaluations;
- All CMS calibration checks;
- All adjustments and maintenance performed on CMS;
- You must maintain a current performance evaluation test plan and quality control procedures and must make these written procedures available upon request for inspection and copying by the Administrator. If you make revisions to your performance evaluation plan, you are required to keep a copy of each previous (i.e., superseded) version of the plan for 5 years after each revision [§63.8(d)(3)]. Previous versions must be available for inspection and copying by the Administrator. If it is relevant, you may incorporate these procedures as part of your SSM plan.

You are also required to keep records of the following [§63.10(c)(1) through (14)]:

- All required CMS measurements (including monitoring data recorded during unavoidable CMS breakdowns and out-of-control periods);
- The date and time identifying each period during which the CMS was inoperative except for zero (low-level) and high-level checks;
- The date and time identifying each period during which the CMS was out of control;
- The specific identification (i.e., date and time of commencement and completion) of each period of excess emissions and parameter monitoring exceedances that occurs during startups, shutdowns, and malfunctions;

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<sup>91</sup> An automated CEMS records and reduces the measured data to the form of the emission limitation through the use of a computerized data acquisition system.

- The specific identification (i.e., date and time of commencement and completion) of each period of excess emissions and parameter monitoring exceedances that occurs during periods other than startups, shutdowns, and malfunctions;
- The nature and cause (if known) of any malfunction;<sup>92</sup>
- The corrective action taken or preventative measures adopted;<sup>93</sup>
- The nature of the repairs or adjustments to the CMS that was inoperative or out of control;<sup>94</sup>
- The total process operating time during the reporting period; and
- All procedures that are a part of a quality control program and implemented for CMS under §63.8(d).

#### 6.7.4 Recordkeeping Requirements for Monitoring Data

You are required to keep records of all monitoring data you collect to demonstrate compliance with your operating limitations [Table 6, items 1, 2, 7, and 8] or emission limitation [Table 6, item 3].

If you are using an oxidation catalyst you must keep records of the catalyst inlet temperature data measured by your CPMS and the monthly pressure drop measurements. If you are not using an oxidation, you are required to keep records of the approved operating parameter. If you are using a CEMS you are required to keep records of CO and oxygen or CO<sub>2</sub> data measured by your CEMS.

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<sup>92</sup> This item may be incorporated into your startup, shutdown, or malfunction plan and records that you are keeping as a part of your SSM plan.

<sup>93</sup> This item may be incorporated into your startup, shutdown, or malfunction plan and records that you are keeping as a part of your SSM plan.

<sup>94</sup> This item may be incorporated into your startup, shutdown, or malfunction plan and records that you are keeping as a part of your SSM plan.

## **6.8 What Notifications and Reports Must I Submit?**

For each notification and report, you send a copy to both your State Air Pollution Control Office and your EPA Regional Office. Appendix B contains a list of Regional EPA offices and addresses.

### **6.8.1 Initial Notification**

The initial notification states that your affected source is subject to the RICE standards. If you have a new or reconstructed 4SLB engine that you startup before August 16, 2004 you are required to submit the initial notification no later than December 13, 2004 [§63.6645(b)].

If you startup your new or reconstructed stationary RICE on or after August 16, 2004, you are required to submit your initial notification within 120 days after your stationary RICE becomes subject to the RICE MACT [§63.6645(c)].

You are required to provide the following information in the initial notification [§63.9(b)(2)]:

1. The name and address of the owner or operator of your facility;
2. The address (i.e., physical location) of your facility;
3. An identification of the relevant standard (in this case, 40 CFR subpart ZZZZ), that is the basis of the notification and the your compliance date;
4. A brief description of the nature, size, design, and method of operation of the source and an identification of the types of emission points within the affected source subject to the relevant standard and types of HAP emitted; and
5. A statement of whether your facility is a major source or an area source.

Appendix C contains an example initial notification form.

### **6.8.2 Notification of Intent to Conduct a Performance Test**

If you are required to conduct performance tests, you must submit a notification of intent to conduct a performance test to identify the scheduled date for the performance test. The notification must be submitted 60 days prior to the test to both your State Air Pollution Control Office and your EPA Regional Office [§§63.6645(e) and 63.7(b)(1)].

### **6.8.3 Notification of Intent to Conduct a Performance Evaluation**

If you are using a CEMS, you must submit a notification of intent to conduct a performance evaluation to identify the scheduled date for the performance evaluation. The notification must be submitted 60 days prior to the test to both your State Air Pollution Control Office and your EPA Regional Office [§63.8(e)(2)].

#### 6.8.4 Performance Test Report

You must submit a performance test report within 60 days after completing the performance test [§63.7(g)]. The report must include an analysis of samples, determination of emissions, and the raw data. The initial performance test results may be submitted with the notification of compliance status.

#### 6.8.5 Notification of Compliance Status

If you have chosen to install a CEMS to continuously monitor CO and oxygen or CO<sub>2</sub> to comply with the CO percent reduction emission limitation, you must submit your Notification of Compliance Status within 30 days following the completion of your performance evaluation [§63.6645(f)(1)].

For all other 4SLB stationary RICE for which you do not install a CEMS, you must submit the Notification of Compliance Status within 60 days following the completion of the performance test [§63.6645(f)(2)].

The Notification of Compliance Status certifies that your stationary RICE is meeting the emission limitations and operating limitations; identifies the option(s) you used to demonstrate initial compliance, summarizes the data and calculations supporting the compliance demonstration, and describes how you will determine continuous compliance.

The Notification of Compliance Status must be signed by a responsible official certifying its accuracy, attesting to whether all stationary RICE are complying with the RICE MACT. The Notification of Compliance Status must contain the following information [§63.9(h)(2)(i)]:

- The methods that were used to determine compliance;
- The results of any performance tests, CMS performance evaluations, and/or other monitoring procedures or methods that were conducted;
- The methods that will be used for determining continuing compliance, including a description of monitoring and reporting requirements and test methods;
- The CO percent reduction (percent) or the formaldehyde concentration in ppmvd at 15% O<sub>2</sub>;
- A description of the oxidation catalyst or other air pollution control equipment (or method) for each stationary RICE; and
- A statement as to whether you have complied with the RICE MACT.

A written report of the average percent load determination must be included in the notification of compliance status. The following information must be included in the report:

- the engine model number;
- the engine manufacturer;
- the year of purchase;
- the manufacturer's site-rated brake horsepower;

- the ambient temperature, pressure, and humidity measured during the performance test; and
- all assumptions that were made to estimate or calculate percent load during the performance test must be clearly explained.

If measurement devices such as flow meters, kilowatt meters, beta analyzers, stain gauges, etc. are used, the model number of the measurement device, and an estimate of its accuracy in percentage of true value must be provided.

After you have been issued a title V operating permit, you must comply with all requirements for compliance status reports contained in your title V permit. After you have been issued a title V operating permit, you are required to submit the notification of compliance status to the appropriate permitting authority following completion of the compliance demonstrations specified in the RICE MACT.

#### 6.8.6 Semiannual Compliance Reports

You must submit semiannual compliance reports. The first compliance report covers the period beginning on the compliance date for your stationary RICE and ends on June 30 or December 31, whichever is the first date following the end of the first calendar half after the compliance date [§63.6650(b)(1)]. The first compliance report is due on either July 31 or January 31, whichever date follows the end of the first calendar half after the compliance date [§63.6650(b)(2)]. Subsequent reports cover the reporting periods from January 1 through June 30 or July 1 through December 31 [§63.6650(b)(3)]. Each subsequent report is due either on July 31 or January 31, whichever is the first date following the end of the semiannual reporting period [§63.6650(b)(4)].

Instead of the schedule just discussed, you may submit the first and subsequent compliance reports on the dates established by your permitting authority under title V operating permit regulations. Your facility must be subject to title V operating permit regulations under 40 CFR part 70 or 71, and your permitting authority must have established dates for submitting semiannual reports [§63.6650(b)(5)].

The semiannual compliance report must contain the following information [§63.6650(c), (d), and (e)]:

- Company name and address.
- Statement by a responsible official, with that official's name, title, and signature, certifying the accuracy of the content of the report.
- Date of report and beginning and ending dates of the reporting period.
- If applicable, a statement that you had a startup, shutdown, or malfunction during the reporting period, and actions taken during the SSM event were consistent with your SSM plan.
- If applicable, the number, duration and a description of any instance where you had a startup, shutdown, or malfunction during the reporting period, and actions taken during the SSM event were not consistent with your SSM plan but you did not exceed your formaldehyde emission limits. Also include the number,

duration, and a description of each type of malfunction that occurred during the reporting period and which caused or may have caused you to exceed your CO or formaldehyde emission limits.

- If you revised your SSM plan during the reporting period, you must include the revision.
- If there are no deviations from any emission or operating limitations that apply to you, a statement that there were no deviations from the emission or operating limitations during the reporting period.
- If there were no periods during which the CMS (including CPMS or CEMS) was out-of-control, a statement that there were no periods during which the CMS was out-of-control during the reporting period.
- A statement that during the reporting period there were no deviations from the emission limitations or operating limitations.
- You must report each time you did not meet your emission limitation or operating limitation that apply to each stationary RICE. These instances are deviations from the emission and operating limitations.
- For each deviation from an emission limitation or operating limitation for a stationary RICE where you are not using a CMS to comply with the emission or operating limitations, you must include: (1) The total operating time of the stationary RICE at which the deviation occurred during the reporting period and (2) Information on the number, duration, and cause of deviations (including unknown cause, if applicable), as applicable, and the corrective action taken.
- For each deviation from an emission limitation or operating limitation for a stationary RICE where you are using a CMS to comply with the emission or operating limitations, you must include:
  - The date and time that each malfunction started and stopped
  - The date, time, and duration that each CMS was inoperative, except for zero (low-level) and high-level checks.
  - The date, time, and duration that each CMS was out-of-control, including start and end dates and hours and descriptions of corrective actions taken.
  - The date and time that each deviation started and stopped, and whether each deviation occurred during a period of malfunction or during another period.
  - A summary of the total duration of the deviation during the reporting period, and the total duration as a percent of the total source operating time during that reporting period.
  - A breakdown of the total duration of the deviations during the reporting period into those that are due to control equipment problems, process problems, other known causes, and other unknown causes.
  - A summary of the total duration of CMS downtime during the reporting period, and the total duration of CMS downtime as a percent of the total operating time of the stationary RICE at which the CMS downtime occurred during that reporting period.
  - An identification of each parameter and pollutant (CO or formaldehyde) that was monitored at the stationary RICE.
  - A brief description of the stationary RICE.

- A brief description of the CMS.
- The date of the latest CMS certification or audit.
- A description of any changes in CMS, processes, or controls since the last reporting period.

#### **6.8.7 Immediate Startup, Shutdown, or Malfunction Reports**

A startup, shutdown, and malfunction report must be submitted immediately if any action taken during a startup, shutdown, or malfunction during the reporting period are not consistent with your SSM plan [Table 7]. You must report actions by phone or by fax within 2 days after starting actions inconsistent with the SSM plan, followed by letter within 7 days. The letter must include the name, title, and signature of the responsible official who is certifying its accuracy, an explanation of the circumstances of the event, the reasons for not following the SSM plan, and a description of all excess emissions and/or parameter monitoring exceedances which are believed to have occurred [§63.10(d)(5)].

## **7.0 What are the MACT Requirements for Compression Ignition Engines?**

The purpose of this section is to provide a detailed summary of the MACT requirements for compression ignition (CI) stationary RICE. Existing CI stationary RICE do not have to meet any requirements under subpart ZZZZ. For each new or reconstructed CI stationary RICE subject to Subpart ZZZZ, you have to comply with the full MACT requirements, including emission limitations, operating limitations, and requirements for performance tests, monitoring, recordkeeping and reporting. The following sections provide a detailed summary of these requirements.

1. What are the Emission Limitations?
2. What are the Emission Testing Requirements?
3. What are the Operating Limits and Parameter Monitoring Requirements If I Am Using an Oxidation Catalyst?
4. What are the Operating Limits and Parameter Monitoring Requirements If I Am Not Using an Oxidation Catalyst?
5. What are the Monitoring Requirements If I am using a CEMS?
6. What are the Startup, Shutdown, and Malfunction Requirements?
7. What Records Must I Keep?
8. What Notification and Reports Must I Submit?

If you do not have a new or reconstructed CI stationary RICE, you may skip this section.

## **7.1 What Are The Emission Limitations?**

For each new or reconstructed CI stationary RICE subject to Subpart ZZZZ, you must comply with ONE of the following emission limitations at 100 percent load plus or minus 10 percent [Table 2a]:

- Reduce carbon monoxide (CO) emissions by 70 percent or more (referred to as the CO percent reduction limit); OR
- Limit the formaldehyde concentration in the stationary RICE exhaust to 580 parts per billion, by volume on a dry basis (ppbvd) at 15 percent O<sub>2</sub> (referred to as the formaldehyde concentration limit).

You may meet the applicable emission limitation by using an oxidation catalyst or an alternative method of control. Whichever method of control you choose, you will have emission testing requirements; operating limits and parameter monitoring requirements; startup, shutdown, and malfunction requirements; recordkeeping requirements; and notification and reporting requirements. You will have different operating limitations and monitoring requirements depending on the method of control you choose. Refer to the summary of operating parameter and monitoring requirements under section 7.3 if you are using an oxidation catalyst and section 7.4 if you are using an alternative method of control.

## 7.2 What Are The Emission Testing Requirements?

You must conduct emission testing on new and reconstructed CI engines subject to Subpart ZZZZ to show that you are meeting ONE of the applicable emission limitations (as discussed in Section 7.1). For MACT, emission tests are called “performance tests.” The following performance tests are required for Subpart ZZZZ:

- You must conduct an initial performance test for new and reconstructed CI engines subject to Subpart ZZZZ (see section 7.2.2).
- You must conduct semiannual performance tests if your CI stationary RICE is not equipped with a continuous emission monitor (CEM) AND you are complying with the CO percent reduction limit, or if you are complying with the formaldehyde concentration limit (see section 7.2.3).
- If you are using an oxidation catalyst, to comply with Subpart ZZZZ, you also must conduct a performance test if you change your catalyst (see section 7.2.4).

In all cases, the emission tests must be conducted according to the requirements included in Subpart ZZZZ, discussed below (see Section 7.2.1).

If you elect to install a CEMS to continuously monitor CO and either oxygen or CO<sub>2</sub>, to demonstrate compliance with the CO percent reduction limitation, you are required to conduct an initial performance evaluation and relative accuracy test audit (RATA). You are not required to conduct the performance tests specified in Table 4. Specific requirements for CEMS are presented in section 7.5.

### 7.2.1 How do I conduct my performance tests?

The following provisions apply to all performance tests:

- You must conduct the tests using the test methods and other test procedures included in Table 4 of Subpart ZZZZ. These provisions are discussed further in Sections 7.2.1.1 and 7.2.1.2 below.
- The tests must be conducted while the engine is operating at 100 percent load plus or minus 10 percent. [63.6620(b)]
- The tests must NOT be conducted during startup, shutdown, or malfunction (SSM) events (see section 7.6 of this document for details on SSM requirements) [§§63.6620(c) and 63.7(e)(1)].
- The tests must include at least three separate test runs, and each test run must last at least one hour [63.6620(d)].
- Operating parameters must be measured during the performance test (see section 7.2.2.1 for operating parameters)
- Determination of engine load must be documented, including the calculations, assumptions, and measurement devices used to measure or estimate the percent load. This information must be submitted in a written report with the performance test results (see section 7.8.4 of this document for the information that must be included in this report).

- You must record ambient temperature, pressure, and humidity for the percent load determination and include the data in a written report (see section 7.8.4 of this document for the information that must be included in this report).

#### 7.2.1.1 What performance test requirements do I have to follow if I am complying with the CO percent reduction limitation?

If you are complying with the CO percent reduction limit, you must conduct all of your performance tests using the following criteria [Table 4, item 1].

1. You must measure the O<sub>2</sub> at the inlet and outlet of the oxidation catalyst or other control device with a portable CO and O<sub>2</sub> analyzer, using ASTM D6522-00<sup>95</sup> (incorporated by reference, according to §63.14). You must make measurements to determine O<sub>2</sub> at the same time as the measurements for CO concentration.
2. You must measure the CO at the inlet and outlet of the oxidation catalyst or other control device with a portable CO and O<sub>2</sub> analyzer, using ASTM D6522-00<sup>96</sup> (incorporated by reference, according to §63.14). The CO concentration must be at 15% O<sub>2</sub>, dry basis

Determine compliance with the CO percent reduction requirement using the following set of equations [§63.6620(e)]:

$$R = \frac{C_i - C_o}{C_i} \times 100$$

Where:

- C<sub>i</sub> = concentration of CO at the oxidation catalyst or other control device inlet,  
 C<sub>o</sub> = concentration of CO at the oxidation catalyst or other control device outlet,  
 R = percent reduction of CO emissions.

You are required to normalize the CO concentration at the inlet and outlet of the oxidation catalyst or other control device to 15% O<sub>2</sub> and a dry basis, or an equivalent percent CO<sub>2</sub>. Use a CO<sub>2</sub> correction factor if CO<sub>2</sub> concentration is measured as an exhaust diluent in lieu of measuring O<sub>2</sub> concentration.

#### ***CO<sub>2</sub> correction factor:***

Step 1: Calculate the fuel-specific F<sub>o</sub> value for the fuel burned during the test.

<sup>95</sup> You may also use Methods 3A and 10 as options to ASTM–D6522–00. You may obtain a copy of ASTM–D6522–00 from at least one of the following addresses: American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428–2959, or University Microfilms International, 300 North Zeeb Road, Ann Arbor, MI 48106.

<sup>96</sup> You may also use Methods 3A and 10 as options to ASTM–D6522–00. You may obtain a copy of ASTM–D6522–00 from at least one of the following addresses: American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428–2959, or University Microfilms International, 300 North Zeeb Road, Ann Arbor, MI 48106.

$$F_o = \frac{0.209 F_d}{F_c}$$

Where:

- $F_o$  = Fuel factor based on the ratio of oxygen volume to the ultimate  $\text{CO}_2$  volume produced by the fuel at zero percent excess air.  
 $0.209$  = Fraction of air that is oxygen, percent/100.  
 $F_d$  = Ratio of the volume of dry effluent gas to the gross calorific value of the fuel from Method 19,  $\text{dsm}^3/\text{J}$  ( $\text{dscf}/106 \text{ Btu}$ ).  
 $F_c$  = Ratio of the volume of  $\text{CO}_2$  produced to the gross calorific value of the fuel from Method 19,  $\text{dsm}^3/\text{J}$  ( $\text{dscf}/106 \text{ Btu}$ ).

Step 2: Calculate the  $\text{CO}_2$  correction factor for correcting measurement data to 15 percent oxygen.

$$X_{\text{CO}_2} = \frac{5.9}{F_o}$$

Where:

- $X_{\text{CO}_2}$  =  $\text{CO}_2$  correction factor, percent.  
 $5.9$  =  $20.9 \text{ percent O}_2 - 15 \text{ percent O}_2$ , the defined  $\text{O}_2$  correction value, percent.

Step 3: Calculate the  $\text{NO}_x$  and  $\text{SO}_2$  gas concentrations adjusted to 15 percent  $\text{O}_2$  using  $\text{CO}_2$  as follows:

$$C_{\text{adj}} = C_d \frac{X_{\text{CO}_2}}{\% \text{CO}_2}$$

Where:

- $\% \text{CO}_2$  = Measured  $\text{CO}_2$  concentration measured, dry basis, percent.

#### 7.2.1.2 What performance test requirements do I have to follow if I am complying with the formaldehyde concentration limitation?

If you are complying with the requirement to limit the formaldehyde concentration you must conduct your initial and all subsequent performance tests using the following criteria [Table 4, item 3]:

1. You must select the location of the sampling port and the number of traverse points using Method 1 or 1A (40 CFR part 60, appendix A). You must choose a sampling site that is located at the outlet of the oxidation catalyst or other control device; AND
2. You must determine the  $\text{O}_2$  concentration of the CI stationary RICE exhaust at the sampling port location using Method 3, 3A or 3B (40 CFR part 60, appendix A).

- You must take the measurements to determine the O<sub>2</sub> concentration at the same time and location as the measurements for the formaldehyde concentration; AND
3. You must measure the moisture content of the CI stationary RICE exhaust at the sampling port location using Method 4 (40 CFR part 60, appendix A) or Method 320 (40 CFR part 63, appendix A) or ASTM D 6348-03. You must take measurements to determine the moisture content at the same time and location as the measurements for the formaldehyde concentration; AND
  4. You must measure formaldehyde at the exhaust of the CI stationary RICE using Method 320 or 323 (40 CFR part 60, appendix A), or ASTM D6348-03,<sup>97</sup> provided in ASTM D6348-03 Annex A5 (Analyte Spiking Technique), the percent R must be  $\geq 70$  and  $\leq 130$ . You must convert the formaldehyde concentration to 15% O<sub>2</sub>, dry basis. Results of this test consist of the average of the three 1-hr or longer runs.

### 7.2.2 Initial Performance Test

You must conduct an initial performance test for new or reconstructed CI engines subject to Subpart ZZZZ to show that you are meeting either the CO percent reduction limit or the formaldehyde concentration limit. The initial performance test must be conducted using the methods and test procedures presented in Section 7.2.1.

The results of the initial performance test must show that you have reduced CO emissions by 70 percent or more or the formaldehyde concentration in your stationary RICE exhaust is less than or equal to 580 ppbvd at 15 percent O<sub>2</sub> [§63.6630(a)].

#### 7.2.2.1 Measuring Operating Parameters During the Initial Performance Test

If you use an oxidation catalyst to comply with MACT, and are NOT using a CEMS, you must record two operating parameters during the initial performance test (Table 5, items 1 and 6):

- pressure drop across the catalyst; and
- inlet temperature to the catalyst.

If you are not using an oxidation catalyst and EPA has approved your petition to establish operating limitations, you must record parameters during the initial performance test in accordance with EPA's approval of your petition to establish operating limitations (Table 5, items 2 and 7). These values will be used to establish your operating limits (see Sections 7.3 or 7.4 of this document). Note that you should not conduct the initial performance test until EPA acts on your petition [§63.6620(f)].

If you are not using an oxidation catalyst and EPA approved your petition EPA to establish NO operating limitations, you are not required to record parameters during the

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<sup>97</sup> You may obtain a copy of ASTM-D6348-03 from at least one of the following addresses: American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, or University Microfilms International, 300 North Zeeb Road, Ann Arbor, MI 48106.

initial performance test. Note that you should not conduct the initial performance test until EPA acts on your petition [§63.6620(f)].

#### 7.2.2.2 When do I have to conduct the initial performance test?

If construction/reconstruction of the new or reconstructed CI stationary RICE commences after June 15, 2004, you must conduct the initial compliance test within 180 days after you start up the new or reconstructed engine [§63.6610(a)].

If you have a new or reconstructed CI stationary RICE that commenced construction (or reconstruction) between December 19, 2002 and June 15, 2004, you have to conduct the initial performance test no later than February 10, 2005 or no later than 180 days after startup of your engine, whichever date is later [§63.6610(b)].

#### 7.2.2.3 When is an initial performance test not required?

You do not have to perform an initial performance test if you have conducted a performance test on your CI stationary RICE that meets the following criteria:

1. The test was conducted using the same test methods specified in section 7.2.1.1 or 7.2.1.2 of this document, and you followed these methods correctly.
2. The test is not older than 2 years.
3. The test has been reviewed and accepted by EPA.
4. No process or equipment changes have been made since the test was performed, or you can demonstrate that the results of the performance test, with or without adjustments, reliably demonstrate compliance despite process or equipment changes.
5. The test was conducted at any load condition within  $\pm 10$  percent of 100 percent load.

You are also not required to conduct an initial performance test if you install a CEMS to continuously monitor CO and either O<sub>2</sub> or CO<sub>2</sub>. Instead, for each CEMS, you are required to conduct an initial performance evaluation (see section 7.5 for more details regarding the performance evaluation). You are required to conduct the initial performance evaluation for each CEMS by February 12, 2005 or within 180 days after startup, whichever is later.

#### 7.2.3 Semiannual Performance Tests

You must conduct semi-annual performance tests if:

- You are complying with the CO percent reduction limit AND your CI stationary RICE is NOT equipped with a CEMS.
- You are complying with the formaldehyde concentration limit [§63.6615 and Table 3].

If you conduct two consecutive performance tests and are in compliance with the applicable emission limitation, you may conduct the subsequent performance tests on an annual basis. You must resume semi-annual tests if:

- Any subsequent performance test shows that you are not in compliance with your emission limit, or
- You deviate from any of your operating limitations [Table 3, footnote].

#### 7.2.4 Other Required Tests

If you are using a catalyst, such as an oxidation catalyst, to comply with Subpart ZZZZ, and you change the catalyst, you are required to conduct a performance test to show that you are meeting the applicable emission limitation. You must also reestablish the values of the operating parameters measured during the initial performance test [§63.6640(b)]. If you are using an oxidation catalyst to comply with MACT, you must reestablish the initial pressure drop for the catalyst and measure the inlet temperature to the catalyst during the catalyst-change performance test.

#### 7.2.5 Reports and Notification for Performance Tests

The reports and notifications required for performance tests are presented in the table below:

**Reports and Notifications for All Performance Tests**

<b>Performance Test Requirement</b>	<b>Deadline</b>
Notification of Intent to Conduct a Performance Test	60 days before test date
Site-Specific Test Plan & Submit to EPA or Delegated Authority if Submittal is Requested	60 days before test date or mutually agreed date
Contact EPA or Delegated Authority to Request Performance Audit Materials	30 days before test date
Submit Results of Performance Test with Notification of Compliance Status Report	60 days after test completion (Completion = date field sample collection is completed) OR If using CEMS, 30 days after performance evaluation completion

These reports and notifications are discussed further in Sections 7.7 and 7.8.

### **7.3 What Are The Operating Limits And Parameter Monitoring Requirements If I Am Using An Oxidation Catalyst?**

In addition to meeting emission limitations, you may also have to meet certain operating limits. The operating limits for CI engines are presented in Table 2b of Subpart ZZZZ. If you choose to install a CEMS, you do not have operating limits to comply with MACT. Section 7.5 presents your requirements if you choose to install a CEMS.

It is important to note that these operating limits are enforceable independent of the emission limits – they are not triggers to assess your emissions. Instead they are separate and enforceable limits.

This section presents the operating limit and parameter monitoring requirements if you are using an oxidation catalyst to meet the applicable CO or formaldehyde emission limit. If you are not using an oxidation catalyst, section 7.4 presents the operating limit and parameter monitoring requirements for other control technologies.

The operating limits and parameter monitoring requirements are the same for both the 70-percent CO percent reduction requirement and the 580-ppbvd formaldehyde concentration requirement.

#### **7.3.1 Operating Limits for CI Engines using Oxidation Catalyst to Comply with MACT**

Two operating limits apply for CI engines using oxidation catalyst to comply with MACT:

- Maintain your catalyst so that the pressure drop across the catalyst does not change by more than two inches of water at 100 percent load plus or minus 10 percent from the pressure drop across the catalyst measured during the initial performance test; and
- Maintain the temperature of your engine exhaust so that the catalyst inlet temperature is greater than or equal to 450°F and less than or equal to 1350°F.

Note that you establish the initial pressure drop across the catalyst during the initial performance test. The allowable range for pressure drop is  $\pm 2$ " WC from the initial pressure drop. Also note that if you change your catalyst, you are required to reestablish the initial pressure drop for the new catalyst element.

As discussed further below, to demonstrate compliance with these operating limits, you must measure pressure drop across the catalyst monthly, and you must continuously monitor temperature at the catalyst inlet (i.e., the stationary RICE exhaust temperature at the catalyst inlet).

#### **7.3.2 Monthly Pressure Drop Measurements**

You demonstrate that you are meeting the pressure drop operating limit by measuring the pressure drop across the catalyst once a month [Table 6, items 1 and 7]. The monthly

pressure drop measurements should be taken while the engine is operating at 100% load  $\pm 10\%$ .

You are meeting the operating limit if the pressure drop measured each month is within two inches of water of the pressure drop measured during the performance test [Table 2b, item 1].

### 7.3.3 Continuous Catalyst Inlet Temperature Monitoring

You are required to install and operate a continuous parameter monitoring system (CPMS) to measure catalyst inlet temperature [Table 5, items 1 and 6]. You must collect the catalyst inlet temperature data and reduce these data to 4-hour rolling averages [Table 6, items 1 and 7].<sup>98</sup> You are meeting the oxidation catalyst inlet temperature operating limit if the 4-hour rolling average oxidation catalyst inlet temperature is greater than or equal to 450°F or less than or equal to 1,350°F [Table 2b, item 1].

### 7.3.4 Continuous Parameter Monitoring System Requirements

For each stationary RICE, you are required to install a CPMS to continuously monitor catalyst inlet temperature (Table 5, items 1 and 6). For each CPMS, you are required to follow certain operation and maintenance requirements; prepare a quality control program; and conduct performance evaluations.

#### 7.3.4.1 Operation and maintenance requirements for CPMS

There are several operation and maintenance requirements for your CPMS [§63.8(c)]:

- You must operate the CPMS at all times, including during periods of startup, shutdown, or malfunction;
- You must have the necessary parts for routine repairs of the CPMS readily available;
- You must develop a written startup, shutdown, and malfunction (SSM) plan for CPMS (see section 7.6 of this document for specific SSM plan requirements);
- The read-out (i.e., visual display or record), or some indication of operation, from your CPMS must be readily accessible for control or inspection by the equipment operator;
- You must install and have the CPMS operational and have the data verified before or at the time of the initial performance test (you verify the operational status of your CPMS by, at a minimum, completing the manufacturer's written specifications or recommendations for installation, operation and calibration of the system);
- You must operate the CPMS continuously except for system breakdowns, out-of-control periods, repairs, maintenance periods, calibration checks, and zero (low-level) and high-level calibration drift adjustments;

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<sup>98</sup> To calculate a rolling average, each hour you calculate the average catalyst inlet temperature for the current hour and the previous three hours.

- You must calibrate the CPMS prior to use;
- You must check each CPMS daily for indication that the system is responding;
- If the CPMS has an internal system check, you must record and check the results on a daily basis for proper operation;
- If you have a CPMS that is out of control,<sup>99</sup> you are required to take the necessary corrective action and repeat all necessary tests which indicate that the system is out of control. You also are required to take corrective actions and conduct retesting until the performance requirements are below the applicable limits. You may not use data recorded during periods that the CPMS is out of control in data averages or calculations.
- If you have a CPMS that is out of control,<sup>100</sup> you have to submit all information concerning out-of-control periods, including start and end dates, hours, and descriptions of your corrective actions in the semiannual compliance report (see section 7.8 of this document for more details on this report).

#### 7.3.4.2 Quality Control Program

You are required to develop and implement a quality control program for your CPMS [§63.8(d)]. The program must contain a written protocol that describes the procedures for the following operations:

- Initial and any subsequent calibration of the CPMS;
- Determination and adjustment of the calibration drift of the CPMS;
- Preventive maintenance of the CPMS, including spare parts inventory;
- Data recording, calculations, and reporting;
- Accuracy audit procedures, including sampling and analysis methods; and
- Program of corrective action for a malfunctioning CPMS.

You are required to maintain these written procedures on record for the life of the stationary RICE or until your stationary RICE is no longer subject to the RICE MACT. If appropriate, you may incorporate these written procedures as part of your SSM plan to avoid duplicating planning and recordkeeping efforts.

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<sup>99</sup> Your CPMS is considered out of control if: (1) the zero (low-level), mid-level (if applicable), or high-level calibration drift (CD) exceeds two times the applicable CD specification in the performance standard; or (2) the CPMS fails a performance test audit (e.g., cylinder gas audit), relative accuracy audit, relative accuracy test audit, or linearity test audit. The beginning of the out-of-control period is the hour you conduct a performance check (e.g., CD) that indicates an exceedance of the established performance requirements. The end of the out-of-control period is the hour following the completion of the corrective action and successful demonstration that the system is within the allowable limits.

<sup>100</sup> Your CPMS is considered out of control if: (1) the zero (low-level), mid-level (if applicable), or high-level calibration drift (CD) exceeds two times the applicable CD specification in the performance standard; or (2) the CPMS fails a performance test audit (e.g., cylinder gas audit), relative accuracy audit, relative accuracy test audit, or linearity test audit. The beginning of the out-of-control period is the hour you conduct a performance check (e.g., CD) that indicates an exceedance of the established performance requirements. The end of the out-of-control period is the hour following the completion of the corrective action and successful demonstration that the system is within the allowable limits.

#### 7.3.4.3 Performance Evaluation

You are required to conduct a performance evaluation for each CPMS [§63.8(e)]. You must conduct the performance evaluation on your CPMS during the initial performance test required under the RICE MACT. You are required to notify the Administrator in writing of the date that you are going to conduct your performance evaluation at the same time as the notification to conduct your performance test.

Before conducting the performance evaluation, you must prepare a site-specific performance evaluation test plan. The following elements must be included in the test plan:

- the evaluation program objectives;
- an evaluation program summary;
- the performance evaluation schedule;
- data quality objectives (the pre-evaluation expectations of precision, accuracy, and completeness of data);
- an internal QA program, which must include, at a minimum, the activities planned by routine operators and analysts to provide an assessment of CPMS performance; and
- an external QA program which must include, at a minimum, systems audits that include the opportunity for on-site evaluation by the Administrator of instrument calibration, data validation, sample logging, and documentation of quality control data and field maintenance activities.

You must submit the performance evaluation test plan ONLY if requested by EPA or the delegated authority. If requested, the site-specific performance evaluation test plan must be submitted at least 60 days before the performance test or performance evaluation is scheduled to begin, or on a mutually agreed upon date. The Administrator will review and approve the performance evaluation test plan at the same time as the review and approval of the site-specific test plan (if review of the site-specific test plan is requested). The Administrator may request additional relevant information after the submittal of a site-specific performance evaluation test plan.

If the Administrator fails to approve or disapprove the site-specific performance evaluation test plan within the 30 calendar days after receipt of the test plan, the following conditions apply:

- If you intend to demonstrate compliance using the monitoring method(s) specified in the RICE MACT, you are required to conduct the performance evaluation at the same time as the performance test using the specified method(s);
- If you intend to demonstrate compliance by using an alternative monitoring method, you must not conduct the performance evaluation until the Administrator approves the use of the alternative method. If the Administrator does not approve the alternative method within 30 days before the performance evaluation is scheduled to begin, the performance evaluation deadlines may be extended such that you must conduct the performance evaluation within 60 calendar days after the Administrator approves the use of the alternative method. You may proceed to

conduct the performance evaluation (without the Administrator's prior approval of the site-specific performance evaluation test plan) if you subsequently choose to use the specified monitoring method(s) instead of an alternative.

## **7.4 What are the Operating Limits and Parameter Monitoring Requirements If I am not Using Oxidation Catalyst?**

If you choose to meet the CO or formaldehyde emission limits using a control technique other than oxidation catalyst, you are required to petition the Administrator for approval of operating limitations to be established during the initial performance test. If you feel that no operating limits are appropriate for your technology, you may also petition the Administrator for approval of no operating limitations. Your petition has to receive approval from the Administrator before you can conduct your initial performance test [§63.6620(f)].

### **7.4.1 Petition for Approval of Operating Limitations**

If you petition the Administrator for approval of operating limitations, the petition must contain the following information [§63.6620(g)]:

- You must identify the specific parameters you propose to use as operating limitations;
- You must provide a discussion of the relationship between these parameters and HAP emissions, identifying how HAP emissions change with changes in these parameters, and how limitations on these parameters will serve to limit HAP emissions;
- You must provide a discussion of how you will establish the upper and/or lower values for these parameters which will establish the limits on these parameters in the operating limitations;
- You must provide a discussion identifying the methods you will use to measure and the instruments you will use to monitor these parameters, as well as the relative accuracy and precision of these methods and instruments; and
- You must provide a discussion identifying the frequency and methods for recalibrating the instruments you will use for monitoring these parameters.

### **7.4.2 Petition for Approval of No Operating Limitations**

If you petition the Administrator for approval of no operating limitations, your petition must include the following information [§63.6620(h)]:

- You must identify the parameters associated with operation of the stationary RICE and the emission control device which could change intentionally (e.g., operator adjustment, automatic controller adjustment, etc.) or unintentionally (e.g., wear and tear, error, etc.) on a routine basis or over time;
- You must provide a discussion of the relationship, if any, between changes in the parameters and changes in HAP emissions;
- For the parameters which could change in such a way as to increase HAP emissions, you must provide a discussion of whether establishing limitations on the parameters would serve to limit HAP emissions;
- For the parameters which could change in such a way as to increase HAP emissions, you must provide a discussion of how you could establish upper and/or

lower values for the parameters which would establish limits on the parameters in operating limitations;

- For the parameters which could change in such a way as to increase HAP emissions, you must provide a discussion identifying the methods you could use to measure them and the instruments you could use to monitor them, as well as the relative accuracy and precision of the methods and instruments;
- For the parameters which could change in such a way as to increase HAP emissions, you must provide a discussion identifying the frequency and methods for recalibrating the instruments you could use to monitor them; and
- You must provide a discussion of why, from your point of view, it is infeasible or unreasonable to adopt the parameters as operating limitations.

### 7.4.3 Continuous Parameter Monitoring System Requirements

If you have petitioned the Administrator for operating limitations, for each stationary RICE you are required to install a continuous parameter monitoring system (CPMS) to continuously monitor your approved operating parameters. For each CPMS, you are required to follow certain operation and maintenance requirements; prepare a quality control program; and conduct performance evaluations.

#### 7.4.3.1 Operation and maintenance requirements for CPMS

There are several operation and maintenance requirements for operation of your CPMS [§63.8(c)]:

- You must operate the CPMS at all times, including during periods of startup, shutdown, or malfunction;
- You must have the necessary parts for routine repairs of the CPMS readily available;
- You must develop a written startup, shutdown, and malfunction (SSM) plan for CPMS (see section 7.6 of this document for specific SSM plan requirements);
- The read-out (i.e., visual display or record), or some indication of operation, from your CPMS must be readily accessible for control or inspection by the equipment operator;
- You must install and have the CPMS operational and have the data verified before or at the time of the initial performance test (you verify the operational status of your CPMS by, at a minimum, completing the manufacturer's written specifications or recommendations for installation, operation and calibration of the system);
- You must operate the CPMS continuously except for system breakdowns, out-of-control periods, repairs, maintenance periods, calibration checks, and zero (low-level) and high-level calibration drift adjustments;
- You must calibrate the CPMS prior to use;
- You must check each CPMS daily for indication that the system is responding;
- If the CPMS has an internal system check, you must record and check the results on a daily basis for proper operation;

- If you have a CPMS that is out of control,<sup>101</sup> you are required to take the necessary corrective action and repeat all necessary tests which indicate that the system is out of control. You also are required to take corrective actions and conduct retesting until the performance requirements are below the applicable limits. You may not use data recorded during periods that the CPMS is out of control in data averages or calculations.
- If you have a CPMS that is out of control,<sup>102</sup> you have to submit all information concerning out-of-control periods, including start and end dates, hours, and descriptions of your corrective actions in the semiannual compliance report (see section 7.8 of this document for more details on this report).

#### 7.4.3.2 Quality Control Program

You are required to develop and implement a quality control program for your CPMS [§63.8(d)]. The program must contain a written protocol that describes the procedures for the following operations:

- Initial and any subsequent calibration of the CPMS;
- Determination and adjustment of the calibration drift of the CPMS;
- Preventive maintenance of the CPMS, including spare parts inventory;
- Data recording, calculations, and reporting;
- Accuracy audit procedures, including sampling and analysis methods; and
- Program of corrective action for a malfunctioning CPMS.

You are required to maintain these written procedures on record for the life of the stationary RICE or until your stationary RICE is no longer subject to the RICE MACT. If appropriate, you may incorporate these written procedures as part of your SSM plan to avoid duplicating planning and recordkeeping efforts.

#### 7.4.3.3 Performance Evaluation

You are required to conduct a performance evaluation for each CPMS [§63.8(e)]. You must conduct the performance evaluation on your CPMS during the initial performance test required under the RICE MACT. You are required to notify the Administrator in

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<sup>101</sup> Your CPMS is considered out of control if: (1) the zero (low-level), mid-level (if applicable), or high-level calibration drift (CD) exceeds two times the applicable CD specification in the performance standard; or (2) the CPMS fails a performance test audit (e.g., cylinder gas audit), relative accuracy audit, relative accuracy test audit, or linearity test audit. The beginning of the out-of-control period is the hour you conduct a performance check (e.g., CD) that indicates an exceedance of the established performance requirements. The end of the out-of-control period is the hour following the completion of the corrective action and successful demonstration that the system is within the allowable limits.

<sup>102</sup> Your CPMS is considered out of control if: (1) the zero (low-level), mid-level (if applicable), or high-level calibration drift (CD) exceeds two times the applicable CD specification in the performance standard; or (2) the CPMS fails a performance test audit (e.g., cylinder gas audit), relative accuracy audit, relative accuracy test audit, or linearity test audit. The beginning of the out-of-control period is the hour you conduct a performance check (e.g., CD) that indicates an exceedance of the established performance requirements. The end of the out-of-control period is the hour following the completion of the corrective action and successful demonstration that the system is within the allowable limits.

writing of the date that you are going to conduct your performance evaluation at the same time you submit the notification to conduct your performance test. If you are not conducting a performance test, the performance evaluation notification must be submitted at least 60 days prior to the date that you are scheduled to begin the performance evaluation.

Before conducting the performance evaluation, you may be required to develop and submit a site-specific performance evaluation test plan to the Administrator for approval. The following elements must be included in the test plan:

- the evaluation program objectives;
- an evaluation program summary;
- the performance evaluation schedule;
- data quality objectives (the pre-evaluation expectations of precision, accuracy, and completeness of data);
- an internal QA program, which must include, at a minimum, the activities planned by routine operators and analysts to provide an assessment of CMS performance; and
- an external QA program which must include, at a minimum, systems audits that include the opportunity for on-site evaluation by the Administrator of instrument calibration, data validation, sample logging, and documentation of quality control data and field maintenance activities.

If the Administrator requests that you submit a site-specific performance evaluation test plan for approval, it is due at least 60 days before the performance test or performance evaluation is scheduled to begin, or on a mutually agreed upon date. The Administrator will review and approve the performance evaluation test plan at the same time as the review and approval of the site-specific test plan (if review of the site-specific test plan is requested). The Administrator may request additional relevant information after the submittal of a site-specific performance evaluation test plan.

If the Administrator fails to approve or disapprove the site-specific performance evaluation test plan within the 30 calendar days after receipt of the test plan, the following conditions apply:

- If you intend to demonstrate compliance using the monitoring method(s) specified in the RICE MACT, you are required to conduct the performance evaluation at the same time as the performance test using the specified method(s);
- If you intend to demonstrate compliance by using an alternative monitoring method, you must not conduct the performance evaluation until the Administrator approves the use of the alternative method. If the Administrator does not approve the alternative method within 30 days before the performance evaluation is scheduled to begin, the performance evaluation deadlines may be extended such that you must conduct the performance evaluation within 60 calendar days after the Administrator approves the use of the alternative method. You may proceed to conduct the performance evaluation (without the Administrator's prior approval of the site-specific performance evaluation test plan) if you subsequently chooses to use the specified monitoring method(s) instead of an alternative.

#### 7.4.4 Requirements for Approved Operating Limits

You are required to install and operate a CPMS to measure your approved operating limit [Table 5, items 2 and 7]. You must collect the parameter data you approved by the Administrator and reduce these data to 4-hour rolling averages [Table 6, items 2 and 8].<sup>103</sup> You are meeting the approved operating limit if the 4-hour rolling average parameter data is within your approved operating limitations for the operating parameters established during the initial performance test.

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<sup>103</sup> To calculate a rolling average, each hour you calculate the average NSCR inlet temperature for the current hour and the previous three hours.

## 7.5 What are the Monitoring Requirements If I am using a CEMS?

If you are complying with the CO percent reduction emission limitation, you have the option of installing a CEMS to demonstrate that you are reducing CO by 70 percent or more. You may choose this option for any control technique. You must install a CEMS to continuously monitor CO and either oxygen or CO<sub>2</sub> at both the inlet and outlet of the control device according to the following [§63.6625(a)]:

- You must install, operate and maintain each CEMS as specified in performance specifications (PS) 3 and 4A of 40 CFR part 60, appendix B.
- You must conduct an initial performance evaluation and an annual relative accuracy test audit (RATA) according to §63.8 and PS 3 and 4 (40 CFR part 60, appendix B).
- You must conduct daily and periodic data quality checks specified in 40 CFR part 60, appendix F, procedure 1.
- You must install the CEMS such that a minimum of one cycle of operation (sampling, analyzing, and data recording) is completed for each successive 15-minute period. There must be two data points, with each representing a different 15-minute period, to have a valid hour of data.
- You must reduce the CEMS data to 1-hour averages computed from four or more data points equally spaced over each 1-hour period, except during periods when calibration, quality assurance, or maintenance activities are being performed. During these periods, an hourly average is considered valid if you have at least two data points, each representing a 15-minute period. NOTE: You may also use an arithmetic or integrated 1-hour average of CEMS data.
- You must also keep records of the reduced data in parts per million at 15 percent oxygen or the equivalent CO<sub>2</sub> concentration.

### 7.5.1 Initial Performance Evaluation Requirements

For each CEMS, you must conduct an initial performance evaluation and an initial RATA using the procedures specified in §63.8 and PS 3 (for oxygen or CO<sub>2</sub>) and 4A (for CO) of 40 CFR part 60, appendix B. You are not required to conduct the performance tests specified in Table 4. The initial performance evaluation must be conducted by February 12, 2005 or within 180 days after startup of your new or reconstructed stationary RICE, whichever date is later.

Once the performance evaluation has been completed you must calculate the average CO percent reduction. This calculation is based on the first four hours of monitoring data collected once the CEMS has been successfully validated [Table 5, item 3.a.iii].

Determine compliance with the CO percent reduction requirement using the following set of equations [§63.6620(e)]:

$$R = \frac{C_i - C_o}{C_i} \times 100$$

Where:

- $C_i$  = concentration of CO at the oxidation catalyst or other control device inlet,  
 $C_o$  = concentration of CO at the oxidation catalyst or other control device outlet,  
 $R$  = percent reduction of CO emissions.

You are required to normalize the CO concentration at the inlet and outlet of the oxidation catalyst or other control device to 15% O<sub>2</sub> and a dry basis, or an equivalent percent CO<sub>2</sub>. Use a CO<sub>2</sub> correction factor if CO<sub>2</sub> concentration is measured as an exhaust diluent in lieu of measuring O<sub>2</sub> concentration.

***CO<sub>2</sub> correction factor:***

Step 1: Calculate the fuel-specific  $F_o$  value for the fuel burned during the test.

$$F_o = \frac{0.209 F_d}{F_c}$$

Where:

- $F_o$  = Fuel factor based on the ratio of oxygen volume to the ultimate CO<sub>2</sub> volume produced by the fuel at zero percent excess air.  
0.209 = Fraction of air that is oxygen, percent/100.  
 $F_d$  = Ratio of the volume of dry effluent gas to the gross calorific value of the fuel from Method 19, dsm<sup>3</sup>/J (dscf/106 Btu).  
 $F_c$  = Ratio of the volume of CO<sub>2</sub> produced to the gross calorific value of the fuel from Method 19, dsm<sup>3</sup>/J (dscf/106 Btu).

Step 2: Calculate the CO<sub>2</sub> correction factor for correcting measurement data to 15 percent oxygen.

$$X_{CO_2} = \frac{5.9}{F_o}$$

Where:

- $X_{CO_2}$  = CO<sub>2</sub> correction factor, percent.  
5.9 = 20.9 percent O<sub>2</sub> - 15 percent O<sub>2</sub>, the defined O<sub>2</sub> correction value, percent.

Step 3: Calculate the NO<sub>x</sub> and SO<sub>2</sub> gas concentrations adjusted to 15 percent O<sub>2</sub> using CO<sub>2</sub> as follows:

$$C_{adj} = C_d \frac{X_{CO_2}}{\%CO_2}$$

Where:

%CO<sub>2</sub> = Measured CO<sub>2</sub> concentration measured, dry basis, percent.

## 7.5.2 Additional Requirements

You are required to conduct annual RATA of each CEMS using PS 3 (for oxygen or CO<sub>2</sub>) and PS 4A (for CO) [40 CFR part 60, appendix B], as well as the daily and periodic data quality checks specified in 40 CFR part 60, appendix F, procedure 1.

You must collect monitoring data (see section 7.5.3 for specific monitoring installation, operation, and maintenance requirements) and reduce the measurements to one-hour averages and calculate the percent reduction of CO emissions using the formulas presented in section 7.5.1. You must collect the one-hour average CO percent reduction data and reduce these data to 4-hour rolling averages [Table 6, item 3].<sup>104</sup> You are meeting the CO percent reduction emission limit if the 4-hour rolling average CO percent reduction is greater than or equal to 70 percent.

## 7.5.3 Continuous Emission Monitoring System Requirements

For each CEMS, you are required to follow certain operation and maintenance requirements; prepare a quality control program; and conduct performance evaluations.

### 7.5.3.1 Operation and maintenance requirements for CEMS

There are several operation and maintenance requirements for your CEMS [§63.8(c)]:

- You must operate the CEMS at all times, including during periods of startup, shutdown, or malfunction;
- You must have the necessary parts for routine repairs of the CEMS readily available;
- You must develop a written startup, shutdown, and malfunction (SSM) plan for CEMS (see section 7.6 of this document for specific SSM plan requirements);
- The read-out (i.e., visual display or record), or some indication of operation, from your CEMS must be readily accessible for control or inspection by the equipment operator;
- You must install and have the CEMS operational and have the data verified either prior to or during the initial performance evaluation (you verify the operational status of your CEMS by, at a minimum, completing the manufacturer's written specifications or recommendations for installation, operation and calibration of the system);
- You must operate the CEMS continuously except for system breakdowns, out-of-control periods, repairs, maintenance periods, calibration checks, and zero (low-level) and high-level calibration drift adjustments;
- Each CEMS must complete a minimum of one cycle of operation (i.e., sampling, analyzing, and data recording) for each successive 15-minute period;

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<sup>104</sup> To calculate a rolling average, each hour you calculate the average CO percent reduction for the current hour and the previous three hours.

- You must check the zero (low-level) and high-level calibration drifts of each CEMS installed according to PS 3 (for oxygen or CO<sub>2</sub>) or PS 4A (for CO) at least once daily according to your performance evaluation plan (see section 7.5.1.3). You must adjust the zero (low-level) and high-level calibration drifts, at a minimum, whenever the 24-hour zero (low-level) drift exceeds two times the limits specified in the PS. The system must allow the amount of excess zero (low-level) and high-level drift measured at the 24-hour interval checks to be recorded and quantified whenever specified.
- If you have a CEMS that is out of control,<sup>105</sup> you are required to take the necessary corrective action and repeat all necessary tests which indicate that the system is out of control. You also are required to take corrective actions and conduct retesting until the performance requirements are below the applicable limits. You may not use data recorded during periods that the CEMS is out of control in data averages or calculations.
- If you have a CEMS that is out of control,<sup>106</sup> you have to submit all information concerning out-of-control periods, including start and end dates, hours, and descriptions of your corrective actions in the semiannual compliance report (see section 7.8 of this document for more details on this report).

#### 7.5.3.2 Quality Control Program

You are required to develop and implement a quality control program for your CEMS [§63.8(d)]. The program must contain a written protocol that describes the procedures for the following operations:

- Initial and any subsequent calibration of the CEMS;
- Determination and adjustment of the calibration drift of the CEMS;
- Preventive maintenance of the CEMS, including spare parts inventory;
- Data recording, calculations, and reporting;
- Accuracy audit procedures, including sampling and analysis methods; and
- Program of corrective action for a malfunctioning CEMS.

You are required to maintain these written procedures on record for the life of the stationary RICE or until your stationary RICE is no longer subject to the RICE MACT. If appropriate, you may incorporate these written procedures as part of your SSM plan to avoid duplicating planning and recordkeeping efforts.

#### 7.5.3.3 Performance Evaluation

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<sup>105</sup> Your CEMS is considered out of control if: (1) the zero (low-level), mid-level (if applicable), or high-level calibration drift (CD) exceeds two times the applicable CD specification in PS 3 or 4A (40 CFR part 60, appendix B; or (2) the CEMS fails a performance test audit (e.g., cylinder gas audit), relative accuracy audit, relative accuracy test audit, or linearity test audit. The beginning of the out-of-control period is the hour you conduct a performance check (e.g., CD) that indicates an exceedance of the established performance requirements. The end of the out-of-control period is the hour following the completion of the corrective action and successful demonstration that the system is within the allowable limits.

<sup>106</sup> See footnote 73.

You are required to conduct a performance evaluation for each CEMS [§63.8(e)]. You must conduct this performance evaluation by February 12, 2005 or within 180 days after startup, whichever is later. You are required to notify the Administrator in writing of the date that you are going to conduct your performance evaluation at least 60 days before the performance evaluation is scheduled to begin.

Before conducting the performance evaluation, you must prepare a site-specific performance evaluation test plan. The following elements must be included in the test plan:

- the evaluation program objectives;
- an evaluation program summary;
- the performance evaluation schedule;
- data quality objectives (the pre-evaluation expectations of precision, accuracy, and completeness of data);
- an internal QA program, which must include, at a minimum, the activities planned by routine operators and analysts to provide an assessment of CEMS performance; and
- an external QA program which must include, at a minimum, systems audits that include the opportunity for on-site evaluation by the Administrator of instrument calibration, data validation, sample logging, and documentation of quality control data and field maintenance activities.

You must submit the performance evaluation test plan ONLY if requested by EPA or the delegated authority. If requested, the site-specific performance evaluation test plan must be submitted at least 60 days before the performance evaluation is scheduled to begin, or on a mutually agreed upon date. The Administrator will review and approve the performance evaluation test plan. The Administrator may request additional relevant information after the submittal of a site-specific performance evaluation test plan.

If the Administrator fails to approve or disapprove the site-specific performance evaluation test plan within the 30 calendar days after receipt of the test plan, the following conditions apply:

- If you intend to demonstrate compliance using the monitoring method(s) specified in the RICE MACT, you are required to conduct the performance evaluation using the specified method(s);
- If you intend to demonstrate compliance by using an alternative monitoring method, you must not conduct the performance evaluation until the Administrator approves the use of the alternative method. If the Administrator does not approve the alternative method within 30 days before the performance evaluation is scheduled to begin, the performance evaluation deadlines may be extended such that you must conduct the performance evaluation within 60 calendar days after the Administrator approves the use of the alternative method. You may proceed to conduct the performance evaluation (without the Administrator's prior approval of the site-specific performance evaluation test plan) if you subsequently choose to use the specified monitoring method(s) instead of an alternative.

## **7.6 What are the Startup, Shutdown, and Malfunction (SSM) Requirements?**

You are required to operate your oxidation catalyst or other control device as well as any CPMS or CEMS at all times, including periods of startup, shutdown, and malfunction (SSM), in a safe manner and according to good air pollution control practices to minimize emissions.

A startup is defined as “the setting in operation of an affected source or portion of an affected source for any purpose.” [§63.2]

A shutdown is defined as “the cessation of operation of an affected source or portion of an affected source for any purpose.” [§63.2]

A malfunction is defined as “any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.” [§63.2]

### **7.6.1 What are my requirements during SSM events?**

You are responsible for reducing emissions to the greatest extent possible and maintain safety and good air control practices whenever there is a period of SSM. This does not mean that you are required to achieve the emission levels required under the RICE MACT during SSM events if it means that you would not be operating in a safe manner and with good air pollution practices nor are you required to make any further efforts to reduce emissions if you are meeting the emission levels required by the RICE MACT.

### **7.6.2 Startup, Shutdown and Malfunction Plan**

You are required to develop and implement a written startup, shutdown, and malfunction (SSM) plan that describes, in detail, procedures for operating and maintaining the each stationary RICE during periods of SSM, and a program of corrective action for malfunctioning process and air pollution control and monitoring equipment (i.e., oxidation catalyst or other control device, pressure drop monitoring equipment, and CPMS or CEMS). You must develop this plan by August 16, 2004 if construction or reconstruction of your new or reconstructed stationary RICE commenced on or after December 19, 2002 but before August 16, 2004. If construction or reconstruction of your new or reconstructed stationary RICE began after August 16, 2004, you must have your SSM plan developed by startup [§63.6(e)(3)(i)].

During periods of SSM, you must operate and maintain your stationary RICE (including each oxidation catalyst or other control device and monitoring equipment) in accordance with the procedures specified in your SSM plan [§63.6(e)(3)(ii)].

#### 7.6.2.1 What must be included in my SSM plan?

EPA does not specify the required elements of a SSM plan, but the SSM plan must address the following [§63.6(e)(3)(i)(A) through (C)]:

1. Ensure that, at all times, you operate and maintain each stationary RICE, including your oxidation catalyst or other control device and monitoring equipment, in a manner which satisfies your general duty to minimize emissions;
2. Ensure that you are prepared to correct malfunctions as soon as practicable after their occurrence in order to minimize excess emissions of hazardous air pollutants; and
3. Reduce the reporting burden associated with periods of startup, shutdown, and malfunction (including corrective action taken to restore malfunctioning process and air pollution control equipment to its normal or usual manner of operation).

To develop your SSM plan, you may use your standard operating procedures (SOP) manual, or an Occupational Safety and Health Administration (OSHA) or other plan, provided the alternative plans meet the SSM plan requirements and are made available for inspection or submitted when requested by EPA or the delegated authority [§63.6(e)(3)(vi)].

#### 7.6.2.2 When may the SSM plan be revised?

You may periodically revise the SSM plan for your stationary RICE as necessary to satisfy the requirements of 40 CFR part 63 or to reflect changes in equipment or procedures at the affected source. Unless EPA or your permitting authority provides otherwise, you may make such revisions to the startup, shutdown, and malfunction plan without prior approval by EPA or the permitting authority [§63.6(e)(3)(viii)]. However, each revision to a SSM plan must be reported in the semiannual compliance report (see section 7.8.6).

If the SSM plan fails to address or inadequately addresses an event that meets the characteristics of a malfunction but was not included in the SSM plan at the time you developed the plan, you must revise the SSM plan within 45 days after the event to include detailed procedures for operating and maintaining the source during similar malfunction events and a program of corrective action for similar malfunctions of process or air pollution control and monitoring equipment [§63.6(e)(3)(viii)].

In the event that you make any revision to the SSM plan which alters the scope of the activities which are deemed to be an SSM, or otherwise modify the applicability of any emission limit or other RICE MACT requirement, the revised plan may not take effect until after you have provided a written notice describing the revision to your permitting authority [§63.6(e)(3)(viii)].

If EPA or the delegated authority determines that you are not operating and maintaining your stationary RICE (including the oxidation catalyst or other control device and monitoring equipment) in such a way that is consistent with safety and good air pollution control practices [§63.6(e)(1)(i)], EPA or the delegated authority may require you to make changes to the SSM plan for that stationary RICE. EPA or the delegated authority must require appropriate revisions to a SSM plan, if EPA or the delegated authority finds that the plan [§63.6(e)(3)(vii)]:

- Does not address a SSM event that has occurred;
- Fails to provide for the operation of the stationary RICE (including the oxidation catalyst or other control device and monitoring equipment) during a SSM event in a manner consistent with the general duty to minimize emissions established by §63.6(e)(1)(i);
- Does not provide adequate procedures for correcting malfunctioning process and/or air pollution control and monitoring equipment as quickly as practicable; or
- Includes an event that does not meet the definition of startup, shutdown, or malfunction listed in §63.2.

The title V permit for a stationary RICE must require that you adopt a SSM plan which conforms to part 63, and that you operate and maintain the stationary in accordance with the procedures specified in the current SSM plan. However, any revisions made to the SSM plan as specified above do not constitute permit revisions under part 70 or part 71 of this chapter. Moreover, none of the procedures specified by the SSM plan for an affected source shall be deemed to fall within the permit shield provision in section 504(f) of the Act [§63.6(e)(3)(ix)].

#### **7.6.2.3      What are my requirements for maintaining my SSM plan?**

You must maintain a current SSM plan and must make the plan available upon request for inspection and copying by the EPA or delegated authority. In addition, if you subsequently revise your SSM plan (see section 7.6.2.2), you must keep each previous (i.e., superseded) version of the SSM plan, and must make each such previous version available for inspection and copying by the EPA or the delegated authority for 5 years after revision of the plan. If at any time after adoption of an SSM plan the stationary RICE ceases operation or is otherwise no longer subject to the RICE MACT, you must keep a copy of the most recent plan for 5 years from the date the stationary RICE ceases operation or is no longer subject the RICE MACT and must make the plan available upon request for inspection and copying by EPA or the delegated authority [§63.6(e)(3)(v)].

EPA or the delegated authority may at any time request in writing that you submit a copy of any SSM plan (or a portion thereof). Upon receipt of such a request, you must promptly submit a copy of the requested plan (or a portion thereof) to EPA or the delegated authority. EPA or the delegated authority must request that you submit a particular SSM plan (or a portion thereof) whenever a member of the public submits a specific and reasonable request to examine or to receive a copy of that plan or portion of a plan. You may elect to submit the required copy of any SSM plan in an electronic

format. If you claim that any portion of such a SSM plan is confidential business information entitled to protection from disclosure under section 114(c) of the Act or 40 CFR 2.301, the material which is claimed as confidential must be clearly designated in the submission. [§63.6(e)(3)(v)]

### 7.6.3 How do I demonstrate I am following my SSM plan?

When you take actions during a period of SSM (including actions taken to correct a malfunction) that are consistent with the procedures specified in the SSM plan developed for your stationary RICE, you must do the following [§63.6(e)(iii)]:

- You must keep records for that event which demonstrate that the procedures specified in the plan were followed. These records may take the form of a “checklist,” or other form of recordkeeping that confirms that you followed the procedures defined in your SSM plan for that event.
- You must keep the following records of these events [§63.10(b)(2)]:
  - Records of the occurrence and duration of each startup, shutdown, or malfunction of operation
  - Records of the occurrence and duration of each malfunction of the oxidation catalyst or other control device and monitoring equipment
- You must confirm that actions taken during the relevant reporting period during periods of SSM were consistent with the startup, shutdown and malfunction plan developed for each stationary RICE in the semiannual (or more frequent) startup, shutdown, and malfunction report required in §63.10(d)(5). Note that this information may also be incorporated into your semiannual compliance report (see section 7.8.6).

If you take an action during a startup, shutdown, or malfunction (including an action taken to correct a malfunction) that is not consistent with the procedures specified in your stationary RICE's startup, shutdown, and malfunction plan, and the stationary RICE exceeds the applicable emission limitation, then you must record the actions taken for that event and must report such actions within 2 working days after commencing actions inconsistent with the plan, followed by a letter within 7 working days after the end of the event, in accordance with §63.10(d)(5) (unless the owner or operator makes alternative reporting arrangements, in advance, with the Administrator) [§63.6(e)(3)(iv)].

## **7.7 What Records Must I Keep?**

You are required to keep records of activities required to meet the final RICE MACT. You must keep files of all information (including reports and notifications) required under the RICE MACT in a format suitable and readily available for “expeditious inspection and review [§63.6660(a)].” You must maintain these records for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record [§63.6660(b)]. Records may be kept in hard copy or electronic form. You may retain at least 2 years of records on-site. You can keep records off-site for the remaining 3 years [§63.6660(c)].

### **7.7.1 Recordkeeping Requirements for Notifications and Reports**

You are required to keep a copy of each notification and report that you have submitted as a part of complying with the RICE MACT, including all documentation supporting any notification or report [§63.6655(a)(1)]. You must maintain records of the following notifications and reports (see section 7.8 of this document for details regarding these notifications and reports):

- Initial Notification;
- Notifications of performance tests;
- Site-specific test plan;
- Notification of performance evaluation for continuous monitoring systems (CMS), including both CPMS and CEMS;
- Site-specific performance evaluation plan(s);
- Any request to use an alternative monitoring procedure;
- Any request for extension of compliance;
- Notification that your source is subject to special compliance requirements;
- Notification of compliance status, including performance test results and written report to document engine load conditions during the test;
- Semiannual compliance reports; and
- Startup, shutdown, and malfunction reports.

### **7.7.2 Recordkeeping Requirements for Startup, Shutdown, and Malfunction Events**

You are required to keep records related to startup, shutdown and malfunction (SSM) events as follows (see section 7.6 for details on SSM events) [§§63.6655(a)(2) and 63.6(e)(3)(iii) through (v)]:

- When you take actions during an SSM event (including actions taken to correct a malfunction), that are consistent with the procedures specified your SSM plan, you must keep records which demonstrate that the procedures specified in the plan were followed. You may keep records in the form of a “checklist,” or you may choose another form of recordkeeping that documents that you have followed your SSM plan for that event.

- You must keep records of these SSM events, including records of the occurrence and duration of each startup, shutdown, or malfunction of operation and each malfunction of the air pollution control and monitoring equipment.
- When you take actions during an SSM event that are not consistent with the procedures specified in the your SSM plan, and the stationary RICE exceeds the formaldehyde emission limitations, then you must record the actions taken for that event.
- You must maintain a current SSM plan and must make the plan available upon request for inspection and copying by the Administrator. If you make revisions to your SSM plan, you are required to keep a copy of each previous (i.e., superseded) version of the SSM plan for 5 years after each revision. Previous versions must be available for inspection and copying by the Administrator.
- If at any time after adoption of a SSM plan stationary RICE ceases operation or is otherwise no longer subject to the RICE MACT, you must retain a copy of the most recent plan for 5 years from the date the stationary RICE ceases operation or is no longer subject to the RICE MACT. This plan must be available upon request for inspection and copying by the Administrator.
- The Administrator may request in writing that you submit a copy of any SSM plan (or portion of the plan). Upon receipt of such a request, you must promptly submit a copy of the requested plan (or portion of the plan) to the Administrator. The Administrator is required to request that you submit a particular SSM plan (or a portion thereof) whenever a member of the public submits a specific and reasonable request to examine or to receive a copy of that plan or portion of a plan. You may elect to submit the required copy of any SSM plan to the Administrator in an electronic format. If you claim that any portion of such a SSM plan is confidential business information entitled to protection from disclosure under section 114(c) of the Act or 40 CFR 2.301, the material which is claimed as confidential must be clearly designated in the submission.

### 7.7.3 Recordkeeping Requirements for Performance Tests and CMS

You are required to keep records of all performance test and performance evaluation results. Performance test results may include analysis of samples, determination of emissions, and raw data [§§63.6655(b) and 63.10(b)(2)(viii)].

For each CMS (this includes CPMS and CEMS), you are required to keep the following records [§§63.6655(b) and 63.10(b)(2)(vi) through (xi)]:

- All CMS performance evaluations;
- Records of each period during which the CMS is malfunctioning or inoperative (including periods where the CMS is out of control);
- All required measurements needed to demonstrate compliance with the operating limitations or the CO percent reduction emission limitation (including, but not limited to, 15-minute averages of CPMS data, raw performance testing measurements, and raw performance evaluation measurements, that support data that you are required to report);

- For each CEMS that is automated<sup>107</sup> and where the calculated data averages do not exclude periods of CEMS breakdowns or malfunction, rather than maintain a file of all CEMS subhourly measurements, you must retain the most recent consecutive three averaging periods of subhourly measurements and a file that contains a hard copy of the data acquisition system algorithm used to reduce the measured data into the reportable form of the standard.
- For each CEMS where measured data is manually reduced to the form of the emission limit, and where calculated data averages do not exclude periods of CEMS breakdowns or malfunctions, rather than maintain a file of all CEMS subhourly measurements, you must retain all subhourly measurements for the most recent reporting period. You must retain the subhourly measurements for 120 days from the date of the most recent semiannual compliance report submitted to EPA.
- EPA or the delegated authority MAY require you to maintain all subhourly records if it is determined that these records are required to more accurately assess the compliance status of your stationary RICE. You will be notified of this requirement
- All measurements as may be necessary to determine the conditions of performance tests and performance evaluations;
- All CMS calibration checks;
- All adjustments and maintenance performed on CMS;
- You must maintain a current performance evaluation test plan and quality control procedures and must make these written procedures available upon request for inspection and copying by the Administrator. If you make revisions to your performance evaluation plan, you are required to keep a copy of each previous (i.e., superseded) version of the plan for 5 years after each revision [§63.8(d)(3)]. Previous versions must be available for inspection and copying by the Administrator. If it is relevant, you may incorporate these procedures as part of your SSM plan.

You are also required to keep records of the following [§63.10(c)(1) through (14)]:

- All required CMS measurements (including monitoring data recorded during unavoidable CMS breakdowns and out-of-control periods);
- The date and time identifying each period during which the CMS was inoperative except for zero (low-level) and high-level checks;
- The date and time identifying each period during which the CMS was out of control;
- The specific identification (i.e., date and time of commencement and completion) of each period of excess emissions and parameter monitoring exceedances that occurs during startups, shutdowns, and malfunctions;

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<sup>107</sup> An automated CEMS records and reduces the measured data to the form of the emission limitation through the use of a computerized data acquisition system.

- The specific identification (i.e., date and time of commencement and completion) of each period of excess emissions and parameter monitoring exceedances that occurs during periods other than startups, shutdowns, and malfunctions;
- The nature and cause (if known) of any malfunction;<sup>108</sup>
- The corrective action taken or preventative measures adopted;<sup>109</sup>
- The nature of the repairs or adjustments to the CMS that was inoperative or out of control;<sup>110</sup>
- The total process operating time during the reporting period; and
- All procedures that are a part of a quality control program and implemented for CMS under §63.8(d).

#### 7.7.4 Recordkeeping Requirements for Monitoring Data

You are required to keep records of all monitoring data you collect to demonstrate compliance with your operating limitations [Table 6, items 1, 2, 7, and 8] or emission limitation [Table 6, item 3].

If you are using an oxidation catalyst you must keep records of the catalyst inlet temperature data measured by your CPMS and the monthly pressure drop measurements. If you are not using an oxidation, you are required to keep records of the approved operating parameter. If you are using a CEMS you are required to keep records of CO and oxygen or CO<sub>2</sub> data measured by your CEMS.

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<sup>108</sup> This item may be incorporated into your startup, shutdown, or malfunction plan and records that you are keeping as a part of your SSM plan.

<sup>109</sup> This item may be incorporated into your startup, shutdown, or malfunction plan and records that you are keeping as a part of your SSM plan.

<sup>110</sup> This item may be incorporated into your startup, shutdown, or malfunction plan and records that you are keeping as a part of your SSM plan.

## **7.8 What Notifications and Reports Must I Submit?**

For each notification and report, you send a copy to both your State Air Pollution Control Office and your EPA Regional Office. Appendix B contains a list of Regional EPA offices and addresses.

### **7.8.1 Initial Notification**

The initial notification states that your affected source is subject to the RICE standards. If you have a new or reconstructed CI engine that you startup before August 16, 2004 you are required to submit the initial notification no later than December 13, 2004 [§63.6645(b)].

If you startup your new or reconstructed stationary RICE on or after August 16, 2004, you are required to submit your initial notification within 120 days after your stationary RICE becomes subject to the RICE MACT [§63.6645(c)].

You are required to provide the following information in the initial notification [§63.9(b)(2)]:

1. The name and address of the owner or operator of your facility;
2. The address (i.e., physical location) of your facility;
3. An identification of the relevant standard (in this case, 40 CFR subpart ZZZZ), that is the basis of the notification and the your compliance date;
4. A brief description of the nature, size, design, and method of operation of the source and an identification of the types of emission points within the affected source subject to the relevant standard and types of HAP emitted; and
5. A statement of whether your facility is a major source or an area source.

Appendix C contains an example initial notification form.

### **7.8.2 Notification of Intent to Conduct a Performance Test**

If you are required to conduct performance tests, you must submit a notification of intent to conduct a performance test to identify the scheduled date for the performance test. The notification must be submitted 60 days prior to the test to both your State Air Pollution Control Office and your EPA Regional Office [§§63.6645(e) and 63.7(b)(1)].

### **7.8.3 Notification of Intent to Conduct a Performance Evaluation**

If you are using a CEMS, you must submit a notification of intent to conduct a performance evaluation to identify the scheduled date for the performance evaluation. The notification must be submitted 60 days prior to the test to both your State Air Pollution Control Office and your EPA Regional Office [§63.8(e)(2)].

#### 7.8.4 Performance Test Report

You must submit a performance test report within 60 days after completing the performance test [§63.7(g)]. The report must include an analysis of samples, determination of emissions, and the raw data. The initial performance test results may be submitted with the notification of compliance status.

#### 7.8.5 Notification of Compliance Status

If you have chosen to install a CEMS to continuously monitor CO and oxygen or CO<sub>2</sub> to comply with the CO percent reduction emission limitation, you must submit your Notification of Compliance Status within 30 days following the completion of your performance evaluation [§63.6645(f)(1)].

For all other CI stationary RICE for which you do not install a CEMS, you must submit the Notification of Compliance Status within 60 days following the completion of the performance test [§63.6645(f)(2)].

The Notification of Compliance Status certifies that your stationary RICE is meeting the emission limitations and operating limitations; identifies the option(s) you used to demonstrate initial compliance, summarizes the data and calculations supporting the compliance demonstration, and describes how you will determine continuous compliance.

The Notification of Compliance Status must be signed by a responsible official certifying its accuracy, attesting to whether all stationary RICE are complying with the RICE MACT. The Notification of Compliance Status must contain the following information [§63.9(h)(2)(i)]:

- The methods that were used to determine compliance;
- The results of any performance tests, CMS performance evaluations, and/or other monitoring procedures or methods that were conducted;
- The methods that will be used for determining continuing compliance, including a description of monitoring and reporting requirements and test methods;
- The CO percent reduction (percent) or the formaldehyde concentration in ppbvd at 15% O<sub>2</sub>;
- A description of the oxidation catalyst or other air pollution control equipment (or method) for each stationary RICE; and
- A statement as to whether you have complied with the RICE MACT.

A written report of the average percent load determination must be included in the notification of compliance status. The following information must be included in the report:

- the engine model number;
- the engine manufacturer;
- the year of purchase;
- the manufacturer's site-rated brake horsepower;

- the ambient temperature, pressure, and humidity measured during the performance test; and
- all assumptions that were made to estimate or calculate percent load during the performance test must be clearly explained.

If measurement devices such as flow meters, kilowatt meters, beta analyzers, stain gauges, etc. are used, the model number of the measurement device, and an estimate of its accuracy in percentage of true value must be provided.

After you have been issued a title V operating permit, you must comply with all requirements for compliance status reports contained in your title V permit. After you have been issued a title V operating permit, you are required to submit the notification of compliance status to the appropriate permitting authority following completion of the compliance demonstrations specified in the RICE MACT.

### 7.8.6 Semiannual Compliance Reports

You must submit semiannual compliance reports. The first compliance report covers the period beginning on the compliance date for your stationary RICE and ends on June 30 or December 31, whichever is the first date following the end of the first calendar half after the compliance date [§63.6650(b)(1)]. The first compliance report is due on either July 31 or January 31, whichever date follows the end of the first calendar half after the compliance date [§63.6650(b)(2)]. Subsequent reports cover the reporting periods from January 1 through June 30 or July 1 through December 31 [§63.6650(b)(3)]. Each subsequent report is due either on July 31 or January 31, whichever is the first date following the end of the semiannual reporting period [§63.6650(b)(4)].

Instead of the schedule just discussed, you may submit the first and subsequent compliance reports on the dates established by your permitting authority under title V operating permit regulations. Your facility must be subject to title V operating permit regulations under 40 CFR part 70 or 71, and your permitting authority must have established dates for submitting semiannual reports [§63.6650(b)(5)].

The semiannual compliance report must contain the following information [§63.6650(c), (d), and (e)]:

- Company name and address.
- Statement by a responsible official, with that official's name, title, and signature, certifying the accuracy of the content of the report.
- Date of report and beginning and ending dates of the reporting period.
- If applicable, a statement that you had a startup, shutdown, or malfunction during the reporting period, and actions taken during the SSM event were consistent with your SSM plan.
- If applicable, the number, duration and a description of any instance where you had a startup, shutdown, or malfunction during the reporting period, and actions taken during the SSM event were not consistent with your SSM plan but you did not exceed your formaldehyde emission limits. Also include the number,

duration, and a description of each type of malfunction that occurred during the reporting period and which caused or may have caused you to exceed your CO or formaldehyde emission limits.

- If you revised your SSM plan during the reporting period, you must include the revision.
- If there are no deviations from any emission or operating limitations that apply to you, a statement that there were no deviations from the emission or operating limitations during the reporting period.
- If there were no periods during which the CMS (including CPMS or CEMS) was out-of-control, a statement that there were no periods during which the CMS was out-of-control during the reporting period.
- A statement that during the reporting period there were no deviations from the emission limitations or operating limitations.
- You must report each time you did not meet your emission limitation or operating limitation that apply to each stationary RICE. These instances are deviations from the emission and operating limitations.
- For each deviation from an emission limitation or operating limitation for a stationary RICE where you are not using a CMS to comply with the emission or operating limitations, you must include: (1) The total operating time of the stationary RICE at which the deviation occurred during the reporting period and (2) Information on the number, duration, and cause of deviations (including unknown cause, if applicable), as applicable, and the corrective action taken.
- For each deviation from an emission limitation or operating limitation for a stationary RICE where you are using a CMS to comply with the emission or operating limitations, you must include:
  - The date and time that each malfunction started and stopped
  - The date, time, and duration that each CMS was inoperative, except for zero (low-level) and high-level checks.
  - The date, time, and duration that each CMS was out-of-control, including start and end dates and hours and descriptions of corrective actions taken.
  - The date and time that each deviation started and stopped, and whether each deviation occurred during a period of malfunction or during another period.
  - A summary of the total duration of the deviation during the reporting period, and the total duration as a percent of the total source operating time during that reporting period.
  - A breakdown of the total duration of the deviations during the reporting period into those that are due to control equipment problems, process problems, other known causes, and other unknown causes.
  - A summary of the total duration of CMS downtime during the reporting period, and the total duration of CMS downtime as a percent of the total operating time of the stationary RICE at which the CMS downtime occurred during that reporting period.
  - An identification of each parameter and pollutant (CO or formaldehyde) that was monitored at the stationary RICE.
  - A brief description of the stationary RICE.

- A brief description of the CMS.
- The date of the latest CMS certification or audit.
- A description of any changes in CMS, processes, or controls since the last reporting period.

#### **7.8.7 Immediate Startup, Shutdown, or Malfunction Reports**

A startup, shutdown, and malfunction report must be submitted immediately if any action taken during a startup, shutdown, or malfunction during the reporting period are not consistent with your SSM plan [Table 7]. You must report actions by phone or by fax within 2 days after starting actions inconsistent with the SSM plan, followed by letter within 7 days. The letter must include the name, title, and signature of the responsible official who is certifying its accuracy, an explanation of the circumstances of the event, the reasons for not following the SSM plan, and a description of all excess emissions and/or parameter monitoring exceedances which are believed to have occurred [§63.10(d)(5)].

## **8.0 What are the MACT Requirements for Limited Use and Emergency Stationary RICE?**

The purpose of this section is to provide a detailed summary of the MACT requirements for limited use and emergency stationary RICE. Existing limited use and emergency stationary RICE do not have to meet any requirements under subpart ZZZZ. For each new or reconstructed limited use and emergency stationary RICE subject to Subpart ZZZZ, you must submit an initial notification but you do not have to meet the MACT requirements under subpart ZZZZ, nor do you have to meet the requirements of the General Provisions under 40 CFR subpart A, specified in Table 8 [§63.6590(b)(1)].

### **8.1 Initial Notification**

You send a copy of the initial notification to both your State Air Pollution Control Office and your EPA Regional Office. Appendix B contains a list of Regional EPA offices and addresses.

The initial notification states that your affected source is subject to the RICE standards. If you have a new or reconstructed limited use or emergency engine that you startup before August 16, 2004 you are required to submit the initial notification no later than December 13, 2004 [§63.6645(b)].

If you startup your new or reconstructed stationary RICE on or after August 16, 2004, you are required to submit your initial notification within 120 days after your stationary RICE becomes subject to the RICE MACT [§63.6645(c)].

You are required to provide the following information in the initial notification [§63.9(b)(2)]:

1. The name and address of the owner or operator of your facility;
2. The address (i.e., physical location) of your facility;
3. An identification of the relevant standard (in this case, 40 CFR subpart ZZZZ), that is the basis of the notification and the your compliance date;
4. A brief description of the nature, size, design, and method of operation of the source and an identification of the types of emission points within the affected source subject to the relevant standard and types of HAP emitted; and
5. A statement of whether your facility is a major source or an area source.

Appendix C contains an example initial notification form.



## **9.0 What are the MACT Requirements for Stationary RICE that Combust Landfill Or Digester Gas Equivalent To 10 Percent Or More Of The Gross Heat Input?**

The purpose of this section is to provide a detailed summary of the MACT requirements for stationary RICE that combust landfill or digester gas equivalent to 10 percent or more of the gross heat input (referred to in this section as landfill/digester stationary RICE). Existing landfill/digester stationary RICE do not have to meet any requirements under subpart ZZZZ. For each new or reconstructed landfill/digester stationary RICE subject to Subpart ZZZZ [§63.6590(b)(2)]:

- You must meet the initial notification requirements of §63.6645(d).
- You must monitor and record fuel usage daily according to §63.6625(c) and §63.6655(c).
- You must submit an annual report according to §63.6650(g).

Your landfill/digester stationary RICE is NOT subject to the emission limits and operating limits of this subpart. Except for the initial notification requirement, your landfill/digester stationary RICE is NOT subject to the requirements of the General Provisions under 40 CFR part 63, subpart A and Table 8 [§63.6665].

### **9.1 Initial Notification**

You send a copy of the initial notification to both your State Air Pollution Control Office and your EPA Regional Office. Appendix B contains a list of Regional EPA offices and addresses.

The initial notification states that your affected source is subject to the RICE standards. If you have a new or reconstructed landfill/digester engine that you startup before August 16, 2004 you are required to submit the initial notification no later than December 13, 2004 [§63.6645(b)].

If you startup your new or reconstructed stationary RICE on or after August 16, 2004, you are required to submit your initial notification within 120 days after your stationary RICE becomes subject to the RICE MACT [§63.6645(c)].

You are required to provide the following information in the initial notification [§63.9(b)(2)]:

1. The name and address of the owner or operator of your facility;
2. The address (i.e., physical location) of your facility;
3. An identification of the relevant standard (in this case, 40 CFR subpart ZZZZ), that is the basis of the notification and the your compliance date;
4. A brief description of the nature, size, design, and method of operation of the source and an identification of the types of emission points within the affected source subject to the relevant standard and types of HAP emitted; and
5. A statement of whether your facility is a major source or an area source.

Appendix C contains an example initial notification form.

## **9.2 Fuel usage monitoring requirements**

You are required to monitor the fuel usage of each landfill/digester stationary RICE. You must use separate fuel meters to measure the volumetric flowrate of each fuel on a daily basis [§63.6625(c)]. You are also required to operate your stationary RICE in a manner which reasonably minimizes HAP emissions.

## **9.3 Fuel usage recordkeeping requirements**

You are required to record the daily fuel usage data for each landfill/digester stationary RICE. [§§63.6625(c) and 63.6655(c)].

## **9.4 Fuel usage reporting requirements**

For each landfill/digester stationary RICE, you are required to submit an annual report which includes the following information [§63.6650(g)]:

- Company name and address.
- Statement by a responsible official, with that official's name, title, and signature, certifying the accuracy of the content of the report.
- Date of report and beginning and ending dates of the reporting period.
- If applicable, a statement that you had a startup, shutdown, or malfunction during the reporting period, and actions taken during the SSM event were consistent with your SSM plan.
- If applicable, the number, duration and a description of any instance where you had a startup, shutdown, or malfunction during the reporting period, and actions taken during the SSM event were not consistent with your SSM plan but you did not exceed your formaldehyde emission limits. Also include the number, duration, and a description of each type of malfunction that occurred during the reporting period and which caused or may have caused you to exceed your CO or formaldehyde emission limits.
- If you revised your SSM plan during the reporting period, you must include the revision.
- If there are no deviations from any emission or operating limitations that apply to you, a statement that there were no deviations from the emission or operating limitations during the reporting period.
- The fuel flowrate of each fuel and the heating values that were used in your calculations.
  - You must also demonstrate that the percentage of heat input provided by landfill gas or digester gas is equivalent to 10 percent or more of the total fuel consumption on an annual basis.
- The operating limits provided in your federally enforceable permit, and any deviations from these limits.
- Any problems or errors that were suspected with the meters.

## **Appendix A**

### **Key Definitions**



## Appendix A. Key Definitions

The following definitions are provided in subpart ZZZZ [§63.6675].

*Area source* means any stationary source of HAP that is not a major source as defined in part 63.

*Associated equipment* as used in this subpart and as referred to in section 112(n)(4) of the CAA, means equipment associated with an oil or natural gas exploration or production well, and includes all equipment from the well bore to the point of custody transfer, except glycol dehydration units, storage vessels with potential for flash emissions, combustion turbines, and stationary RICE.

*CAA* means the Clean Air Act (42 U.S.C. 7401 *et seq.*, as amended by Public Law 101–549, 104 Stat. 2399).

*Compression ignition engine* means any stationary RICE in which a high boiling point liquid fuel injected into the combustion chamber ignites when the air charge has been compressed to a temperature sufficiently high for autoignition, including diesel engines, dualfuel engines, and engines that are not spark ignition.

*Custody transfer* means the transfer of hydrocarbon liquids or natural gas: After processing and/or treatment in the producing operations, or from storage vessels or automatic transfer facilities or other such equipment, including product loading racks, to pipelines or any other forms of transportation. For the purposes of this subpart, the point at which such liquids or natural gas enters a natural gas processing plant is a point of custody transfer.

*Deviation* means any instance in which an affected source subject to this subpart, or an owner or operator of such a source:

- (1) Fails to meet any requirement or obligation established by this subpart, including but not limited to any emission limitation or operating limitation;
- (2) Fails to meet any term or condition that is adopted to implement an applicable requirement in this subpart and that is included in the operating permit for any affected source required to obtain such a permit; or
- (3) Fails to meet any emission limitation or operating limitation in this subpart during malfunction, regardless of whether or not such failure is permitted by this subpart.
- (4) Fails to conform to any provision of the applicable startup, shutdown, or malfunction plan, or to satisfy the general duty to minimize emissions established by § 63.6(e)(1)(i).

*Diesel engine* means any stationary RICE in which a high boiling point liquid fuel injected into the combustion chamber ignites when the air charge has been compressed to a temperature sufficiently high for auto-ignition. This process is also known as compression ignition.

*Diesel fuel* means any liquid obtained from the distillation of petroleum with a boiling point of approximately 150 to 360 degrees Celsius. One commonly used form is fuel oil number 2.

*Digester gas* means any gaseous byproduct of wastewater treatment typically formed through the anaerobic decomposition of organic waste materials and composed principally of methane and CO<sub>2</sub>.

*Dual-fuel engine* means any stationary RICE in which a liquid fuel (typically diesel fuel) is used for compression ignition and gaseous fuel (typically natural gas) is used as the primary fuel.

*Emergency stationary RICE* means any stationary RICE that operates in an emergency situation. Examples include stationary RICE used to produce power for critical networks or equipment (including power supplied to portions of a facility) when electric power from the local utility is interrupted, or stationary RICE used to pump water in the case of fire or flood, etc. Emergency stationary RICE may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by the manufacturer, the vendor, or the insurance company associated with the engine. Required testing of such units should be minimized, but there is no time limit on the use of emergency stationary RICE in emergency situations and for routine testing and maintenance. Emergency stationary RICE may also operate an additional 50 hours per year in nonemergency situations.

*Four-stroke engine* means any type of engine which completes the power cycle in two crankshaft revolutions, with intake and compression strokes in the first revolution and power and exhaust strokes in the second revolution.

*Gaseous fuel* means a material used for combustion which is in the gaseous state at standard atmospheric temperature and pressure conditions.

*Glycol dehydration unit* means a device in which a liquid glycol (including, but not limited to, ethylene glycol, diethylene glycol, or triethylene glycol) absorbent directly contacts a natural gas stream and absorbs water in a contact tower or absorption column (absorber). The glycol contacts and absorbs water vapor and other gas stream constituents from the natural gas and becomes “rich” glycol. This glycol is then regenerated in the glycol dehydration unit reboiler. The “lean” glycol is then recycled.

*Hazardous air pollutants (HAP)* means any air pollutants listed in or pursuant to section 112(b) of the CAA.

*ISO standard day conditions* means 288 degrees Kelvin (15 degrees Celsius), 60 percent relative humidity and 101.3 kilopascals pressure.

*Landfill gas* means a gaseous byproduct of the land application of municipal refuse typically formed through the anaerobic decomposition of waste materials and composed principally of methane and CO<sub>2</sub>.

*Lean burn engine* means any two-stroke or four-stroke spark ignited engine that does not meet the definition of a rich burn engine.

*Limited use stationary RICE* means any stationary RICE that operates less than 100 hours per year.

*Liquefied petroleum gas* means any liquefied hydrocarbon gas obtained as a by-product in petroleum refining or natural gas production.

*Liquid fuel* means any fuel in liquid form at standard temperature and pressure, including but not limited to diesel, residual/crude oil, kerosene/naphtha (jet fuel), and gasoline.

*Major Source*, as used in this subpart, shall have the same meaning as in § 63.2, except that:

- (1) Emissions from any oil or gas exploration or production well (with its associated equipment (as defined in this section)) and emissions from any pipeline compressor station or pump station shall not be aggregated with emissions from other similar units, to determine whether such emission points or stations are major sources, even when emission points are in a contiguous area or under common control;
- (2) For oil and gas production facilities, emissions from processes, operations, or equipment that are not part of the same oil and gas production facility, as defined in § 63.1271 of subpart HHH of this part, shall not be aggregated;
- (3) For production field facilities, only HAP emissions from glycol dehydration units, storage vessel with the potential for flash emissions, combustion turbines and reciprocating internal combustion engines shall be aggregated for a major source determination; and
- (4) Emissions from processes, operations, and equipment that are not part of the same natural gas transmission and storage facility, as defined in § 63.1271 of subpart HHH of this part, shall not be aggregated.

*Malfunction* means any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.

*Natural gas* means a naturally occurring mixture of hydrocarbon and non-hydrocarbon gases found in geologic formations beneath the Earth's surface, of which the principal constituent is methane. May be field or pipeline quality.

*Non-selective catalytic reduction (NSCR)* means an add-on catalytic nitrogen oxides (NO<sub>x</sub>) control device for rich burn engines that, in a two-step reaction, promotes the

conversion of excess oxygen, NO<sub>x</sub>, CO, and volatile organic compounds (VOC) into CO<sub>2</sub>, nitrogen, and water.

*Oil and gas production facility* as used in this subpart means any grouping of equipment where hydrocarbon liquids are processed, upgraded (*i.e.*, remove impurities or other constituents to meet contract specifications), or stored prior to the point of custody transfer; or where natural gas is processed, upgraded, or stored prior to entering the natural gas transmission and storage source category. For purposes of a major source determination, facility (including a building, structure, or installation) means oil and natural gas production and processing equipment that is located within the boundaries of an individual surface site as defined in this section. Equipment that is part of a facility will typically be located within close proximity to other equipment located at the same facility. Pieces of production equipment or groupings of equipment located on different oil and gas leases, mineral fee tracts, lease tracts, subsurface or surface unit areas, surface fee tracts, surface lease tracts, or separate surface sites, whether or not connected by a road, waterway, power line or pipeline, shall not be considered part of the same facility. Examples of facilities in the oil and natural gas production source category include, but are not limited to, well sites, satellite tank batteries, central tank batteries, a compressor station that transports natural gas to a natural gas processing plant, and natural gas processing plants.

*Oxidation catalyst* means an add-on catalytic control device that controls CO and VOC by oxidation.

*Peaking unit or engine* means any standby engine intended for use during periods of high demand that are not emergencies.

*Percent load* means the fractional power of an engine compared to its maximum manufacturer's design capacity at engine site conditions. Percent load may range between 0 percent to above 100 percent.

*Potential to emit* means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the stationary source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable. For oil and natural gas production facilities subject to subpart HH of this part, the potential to emit provisions in § 63.760(a) may be used. For natural gas transmission and storage facilities subject to subpart HHH of this part, the maximum annual facility gas throughput for storage facilities may be determined according to §63.1270(a)(1) and the maximum annual throughput for transmission facilities may be determined according to § 63.1270(a)(2).

*Production field facility* means those oil and gas production facilities located prior to the point of custody transfer.

*Production well* means any hole drilled in the earth from which crude oil, condensate, or field natural gas is extracted.

*Propane* means a colorless gas derived from petroleum and natural gas, with the molecular structure  $C_3H_8$ .

*Responsible official* means responsible official as defined in 40 CFR 70.2.

*Rich burn engine* means any fourstroke spark ignited engine where the manufacturer's recommended operating air/fuel ratio divided by the stoichiometric air/fuel ratio at full load conditions is less than or equal to 1.1. Engines originally manufactured as rich burn engines, but modified prior to December 19, 2002 with passive emission control technology for  $NO_x$  (such as pre-combustion chambers) will be considered lean burn engines. Also, existing engines where there are no manufacturer's recommendations regarding air/fuel ratio will be considered a rich burn engine if the excess oxygen content of the exhaust at full load conditions is less than or equal to 2 percent.

*Site-rated HP* means the maximum manufacturer's design capacity at engine site conditions.

*Spark ignition engine* means a type of engine in which a compressed air/fuel mixture is ignited by a timed electric spark generated by a spark plug.

*Stationary reciprocating internal combustion engine (RICE)* means any reciprocating internal combustion engine which uses reciprocating motion to convert heat energy into mechanical work and which is not mobile. Stationary RICE differ from mobile RICE in that a stationary RICE is not a nonroad engine as defined at 40 CFR 1068.30, and is not used to propel a motor vehicle or a vehicle used solely for competition.

*Stationary RICE test cell/stand* means an engine test cell/stand, as defined in subpart PPPPP of this part, that tests stationary RICE.

*Stoichiometric* means the theoretical air-to-fuel ratio required for complete combustion.

*Storage vessel with the potential for flash emissions* means any storage vessel that contains a hydrocarbon liquid with a stock tank gas-to-oil ratio equal to or greater than 0.31 cubic meters per liter and an American Petroleum Institute gravity equal to or greater than 40 degrees and an actual annual average hydrocarbon liquid throughput equal to or greater than 79,500 liters per day. Flash emissions occur when dissolved hydrocarbons in the fluid evolve from solution when the fluid pressure is reduced.

*Subpart* means 40 CFR part 63, subpart ZZZZ.

*Surface site* means any combination of one or more graded pad sites, gravel pad sites, foundations, platforms, or the immediate physical location upon which equipment is physically affixed.

*Two-stroke engine* means a type of engine which completes the power cycle in single crankshaft revolution by combining the intake and compression operations into one stroke and the power and exhaust operations into a second stroke. This system requires auxiliary scavenging and inherently runs lean of stoichiometric.

## **Appendix B**

### **Regional EPA Offices and Addresses**



## **Appendix B. Regional EPA Offices and Addresses**

**EPA Region I** (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont), Air Compliance Clerk, 1 Congress Street, Suite 1100, Boston, MA 02114-2023.

**EPA Region II** (New Jersey, New York, Puerto Rico, Virgin Islands), Air Compliance Branch Chief, 290 Broadway, New York, NY 10007-1866.

**EPA Region III** (Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia), Director, Air Protection Division, 1650 Arch Street, Philadelphia, PA 19103-2029.

**EPA Region IV** (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee), Director, Air, Pesticides and Toxics Management Division, Atlanta Federal Center, 61 Forsyth Street, SW, Atlanta, GA 30303-3104.

**EPA Region V** (Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin), Director, Air and Radiation Division, 77 West Jackson Blvd., Chicago, IL 60604-3507.

**EPA Region VI** (Arkansas, Louisiana, New Mexico, Oklahoma, Texas), Air Permits Section, Fountain Place 12<sup>th</sup> Floor, Suite 1200, 1445 Ross Avenue, Dallas, TX 75202-2733.

**EPA Region VII** (Iowa, Kansas, Missouri, Nebraska), Director, Air, RCRA and Toxics Division, 901 North 5<sup>th</sup> Street, Kansas City, KS 66101.

**EPA Region VIII** (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming), Air and Toxics, 999 18th Street, Suite 500, Denver, CO 80202-2466.

**EPA Region IX** (Arizona, California, Hawaii, Nevada, American Samoa, Guam), Air Division, 75 Hawthorne Street, San Francisco, CA 94105.

**EPA Region X** (Alaska, Idaho, Oregon, Washington), Director, Office of Air Quality, 1200 Sixth Avenue, Seattle, WA 98101.



## **Appendix C**

### **Example Initial Notification Form**



## Appendix C

### Example Initial Notification Form

**Applicable Rule:** 40 CFR part 63, subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE MACT)

**Please read the rule for details on requirements and deadlines.** Notification requirements are found in §63.6645 of subpart ZZZZ and §63.9 of the General Provisions as noted.

*Please note that you are not required to use this form and may submit the required information in a letter. However, all required information must be submitted by the following initial notification deadlines:*

- **December 13, 2004** for sources whose startup occurs before August 16, 2004; OR
- **Not later than 120 days after startup**, if startup occurs on or after August 16, 2004.

Please print or type the following information for each source subject to the RICE MACT.

**1. Name and Address of Facility Owner [40 CFR §63.9(b)(2)(i) and (ii)]**

Name of Facility: \_\_\_\_\_

Name of Owner/Operator: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

City: \_\_\_\_\_ County: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Physical Location (if different from mailing address)

Street Address: \_\_\_\_\_

City: \_\_\_\_\_ County: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Contact Person: \_\_\_\_\_ Phone Number: \_\_\_\_\_

Email: \_\_\_\_\_

**2. Is the facility a Major Source [40 CFR §63.9(b)(2)(v)]?** ☐ Yes ☐ No\*

\*(The facility is considered an area source and does not need to submit this form)

**2a. Do you intend to accept enforceable permit limits to reduce emissions of hazardous air pollutants (HAP) to less than major source levels prior to the MACT compliance date(s) for engines at this facility?** ☐ Yes\* ☐ No

\*If yes, please attach a description of the action(s) planned to achieve non-major status. NOTE: The description of action(s) planned to achieve non-major status is provided for information only and is not binding. If you take federally enforceable permit limits, prior to the subpart ZZZZ compliance date, to reduce total HAP emissions from your facility such that you are not longer a major source (as defined in 40 CFR §63.2), engines located at your facility will not be subject to the subpart (refer to the instructions).

**3. Relevant standard and compliance date [40 CFR §63.9(b)(2)(iii)]**

This facility operates RICE that are subject to 40 CFR part 63, subpart ZZZZ (check one):

☐ Yes ☐ No

Subpart ZZZZ requires you to submit an initial notification for new engines with a site rating greater than 500 horsepower (hp) that are located at major sources of HAP emissions. You are also required to submit an initial notification for existing spark ignition 4-stroke rich burn engines with a site rating greater than 500 HP that are located at major sources of HAP emissions. Therefore, it is not necessary to list all engines located at a given facility. Complete the following table for each engine for which initial notification is required under 40 CFR part 63, subpart ZZZZ (attach additional copies of this page as needed).

Engine ID	Engine Description		Site-Rated Horsepower (hp)	Existing/New/Reconstructed <sup>a</sup>	Subpart ZZZZ Subcategory <sup>b</sup>	Subpart ZZZZ Compliance Date	Initial Notification Only? <sup>c</sup>
	Manufacturer	Model					
							<input type="checkbox"/> Yes <input type="checkbox"/> No
							<input type="checkbox"/> Yes <input type="checkbox"/> No
							<input type="checkbox"/> Yes <input type="checkbox"/> No
							<input type="checkbox"/> Yes <input type="checkbox"/> No
							<input type="checkbox"/> Yes <input type="checkbox"/> No
							<input type="checkbox"/> Yes <input type="checkbox"/> No
							<input type="checkbox"/> Yes <input type="checkbox"/> No
							<input type="checkbox"/> Yes <input type="checkbox"/> No
							<input type="checkbox"/> Yes <input type="checkbox"/> No
							<input type="checkbox"/> Yes <input type="checkbox"/> No
							<input type="checkbox"/> Yes <input type="checkbox"/> No
							<input type="checkbox"/> Yes <input type="checkbox"/> No

<sup>a</sup> Refer to the definition for existing, new, and reconstructed included in the instructions for this form.

<sup>b</sup> Use the subcategories included in the instructions for this form.

<sup>c</sup> If yes, attach rationale to explain why each engine had no additional requirements under subpart ZZZZ (e.g., engine operates as an emergency stationary RICE).

4. For the stationary RICE listed in question 3, provide a list of the HAP emitted [40 CFR §63.9(b)(2)(iv)].

- |          |           |
|----------|-----------|
| 1. _____ | 7. _____  |
| 2. _____ | 8. _____  |
| 3. _____ | 9. _____  |
| 4. _____ | 10. _____ |
| 5. _____ | 11. _____ |
| 6. _____ | 12. _____ |

5. Signature

I certify that the information contained in this form to be accurate and true to the best of my knowledge.

Authorized Signature \_\_\_\_\_

Typed or Printed Name of Signatory \_\_\_\_\_

Title of Signatory \_\_\_\_\_ Date \_\_\_\_\_

Please mail this completed form to both your State Air Pollution Control Office  
and your EPA Regional Office

## Instructions

### Question 1. Facility Information [40 CFR §63.9(b)(2)(i)and (ii)]

This question is self-explanatory –include the name and address, including physical location, if different, of the facility.

### Question 2. Is The Facility a Major Source? [40 CFR §63.9(b)(2)(v)]

You are a major source if your plant site emits or has the potential to emit 10 tons per year (tpy) of one HAP or 25 tpy of any combination of HAP [§63.6585(b)]. Most RICE or groups of RICE are not major HAP emissions sources by themselves but are located at major HAP sites. Note that a facility is considered “major” for HAP emissions, regardless of the contribution from the RICE alone. Further, you must include all RICE at your facility in this calculation, not just RICE with site-rated horsepower greater than 500.

When calculating the potential to emit, include all HAP emission sources located within the contiguous area and under common control, not just RICE. However, the RICE MACT has special considerations for determining major source status of oil and gas production and natural gas transmission and storage facilities [§63.6585(b)].

1. Do not add together emissions from any oil or gas exploration or production well (with its associated equipment<sup>1</sup>) and emissions from any pipeline compressor station or pump station with emissions from other similar units, even when emission points are in a contiguous area or under common control.
2. For oil and gas production facilities, do not add together emissions from processes, operations, or equipment that are not part of the same oil and gas production facility.<sup>2</sup>
3. For production field facilities, only HAP emissions from glycol dehydration units, storage vessel with the potential for flash emissions, combustion turbines and RICE need to be added together.
4. Do not add together emissions from processes, operations, and equipment that are not part of the same natural gas transmission and storage facility.<sup>3</sup>

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<sup>1</sup> “Associated equipment” is equipment associated with an oil or natural gas exploration or production well, and includes all equipment from the well bore to the point of custody transfer, except glycol dehydration units, storage vessels with potential for flash emissions, combustion turbines, and stationary RICE.

<sup>2</sup> “Oil and gas production facility” means any grouping of equipment where hydrocarbon liquids are processed, upgraded (i.e., remove impurities or other constituents to meet contract specifications), or stored prior to the point of custody transfer; or where natural gas is processed, upgraded, or stored prior to entering the natural gas transmission and storage source category. For purposes of a major source determination, “facility” (including a building, structure, or installation) means oil and natural gas production and processing equipment that is located within the boundaries of an individual surface site as defined in this section. Equipment that is part of a facility will typically be located within close proximity to other equipment located at the same facility. Pieces of production equipment or groupings of equipment located on different oil and gas leases, mineral fee tracts, lease tracts, subsurface or surface unit areas, surface fee tracts, surface lease tracts, or separate surface sites, whether or not connected by a road, waterway, power line or pipeline, shall not be considered part of the same facility. Examples of facilities in the oil and natural gas production source category include, but are not limited to, well sites, satellite tank batteries, central tank batteries, a compressor station that transports natural gas to a natural gas processing plant, and natural gas processing plants.

<sup>3</sup> “Natural gas transmission and storage facility” means any grouping of equipment where natural gas is processed, compressed, or stored prior to entering a pipeline to a local distribution company or (if there is no local distribution company) to a final end user. Examples of a facility for this source category are: an underground natural gas storage operation; or a

To determine the potential to emit, follow these steps:

1. Identify all sources of emissions considering the oil and natural gas provisions listed above, if applicable.
2. Identify all HAP that your plant site emits.
3. Select a method to use to determine your HAP emissions.
4. For each HAP, determine the maximum amount that each production process or piece of equipment in your plant site can emit in one year. Use one of the following:
  - a. Your RICE (or other process) operates 24 hours per day, 7 days per week, 365 days per year without control.
  - b. If you have federally enforceable<sup>4</sup> restrictions that affect emissions (for example, hours of operations, the presence of a control device, or the type of fuel used) you may include the effect that these restrictions have on emissions in your potential-to-emit calculations.
  - c. *Oil and natural gas production facilities* [§63.6675]: Potential-to-emit is calculated using the maximum natural gas or hydrocarbon liquid throughput for an oil and natural gas production facility. You may choose from one of the following methods to determine your maximum natural gas or hydrocarbon liquid [§63.760(a)]:
    - i. If you can show a decline in annual natural gas or hydrocarbon liquid throughput (whichever is appropriate) for the five years prior to June 17, 1999, your maximum annual natural gas or hydrocarbon liquid throughput is the average annual natural gas or hydrocarbon liquid throughput for the three years prior to June 17, 1999 times 1.2.<sup>5</sup>
    - ii. If you cannot show a decline in annual natural gas or hydrocarbon liquid throughput (whichever is appropriate) for the five years prior to June 17, 1999, your maximum annual natural gas or hydrocarbon liquid throughput is the highest annual natural gas or hydrocarbon liquid throughput over the five years prior to June 17, 1999 times 1.2.<sup>6</sup>
    - iii. You may use your facility's design maximum natural gas or hydrocarbon liquid throughput to estimate potential-to-emit for your facility.

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natural gas compressor station that receives natural gas via pipeline, from an underground natural gas storage operation, or from a natural gas processing plant. The emission points associated with these phases include, but are not limited to, process vents. Processes that may have vents include, but are not limited to, dehydration and compressor station engines. For the purpose of a major source determination, facility means natural gas transmission and storage equipment that is located inside the boundaries of an individual surface site and is connected by ancillary equipment, such as gas flow lines or power lines. Equipment that is part of a facility will typically be located within close proximity to other equipment located at the same facility. Natural gas transmission and storage equipment or groupings of equipment located on different gas leases, mineral fee tracts, lease tracts, subsurface unit areas, surface fee tracts, or surface lease tracts shall not be considered part of the same facility.

<sup>4</sup> The following are considered federally enforceable limits and/or operating conditions: limits set as a part of a MACT standard; limits set as a part of an NSPS; title V permit limits; limits set as part of an approved State Implementation Plan (SIP) or Federal Implementation Plan (FIP); limits set as part of a construction permit under 40 CFR part 51; certain operating permits; limits set under a State rule that has been approved by EPA to implement and enforce MACT; and consent agreements.

<sup>5</sup> If the annual natural gas or hydrocarbon liquid throughput increases above the maximum throughput calculated under this option, you must recalculate your maximum throughput using the higher throughput times 1.2.

<sup>6</sup> If the annual natural gas or hydrocarbon liquid throughput increases above the maximum throughput calculated under this option, you must recalculate your maximum throughput using the higher throughput times 1.2.

- iv. You must determine the maximum values for other parameters used to estimate potential-to-emit as the maximum for the same period of time you determined your maximum natural gas or hydrocarbon liquid throughput above. You must base these parameters on an annual average or the highest single measured value.
- d. *Natural gas transmission and storage facilities* [§63.6675]. Potential-to-emit is calculated using the maximum natural gas throughput for a natural gas transmission and storage facility. You may choose from one of the following methods to determine your maximum natural gas throughput [§63.1270(a)(1) and (2)]:

- i. If your facility stores natural gas, you may choose to calculate maximum annual natural gas throughput using the following equation:<sup>7</sup>

$$Throughput = \frac{8,760}{\left( \frac{1}{IR_{max}} + \frac{1}{WR_{max}} \right)}$$

Where:

Throughput = Maximum annual facilitywide natural gas throughput in cubic meters per year.

$IR_{max}$  = Maximum facility injection rate in cubic meters per hour.

$WR_{max}$  = Maximum facility withdrawal rate in cubic meters per hour.

8,760 = Maximum hours of operation per year.

- ii. If your facility only transports natural gas, you may calculate maximum annual natural gas throughput as the highest annual natural gas throughput over the five years prior to June 17, 1999 times 1.2.<sup>8</sup>
  - iii. You may use your facility's design maximum natural gas throughput to estimate potential-to-emit for your facility.
  - iv. You must determine the maximum values for other parameters used to estimate potential-to-emit as the maximum for the same period of time you determined your maximum natural gas throughput above. You must base these parameters on an annual average or the highest single measured value.
5. Add the maximum emissions from all production processes and equipment.

Since Subpart ZZZZ only applies to major sources, true minors or area sources do not need to complete and submit this form. Similarly, if you have obtained a synthetic minor permit, you would be a minor source not subject to this NESHAP. However, if you are in the process of obtaining a synthetic minor permit, please include the relevant information at Question 2a.

### Question 2a. Synthetic Minor Sources

EPA policy provides owners/operators with the opportunity to avoid a standard through a limit on its potential to emit, if federally enforceable permit limits are in place (i.e., approved by the delegated

<sup>7</sup> If the annual natural gas throughput increases above the maximum throughput calculated under this option, you must recalculate your maximum throughput using the higher throughput times 1.2.

<sup>8</sup> If the annual natural gas throughput increases above the maximum throughput calculated under this option, you must recalculate your maximum throughput using the higher throughput times 1.2.

authority) prior to the compliance date of the standard.<sup>9</sup> This question is intended to notify the delegated authority that a major source facility is seeking federally enforceable permit limits to avoid subpart ZZZZ by becoming a “synthetic minor source” (i.e., potential to emit is less than 10 tpy of any one HAP or 25 tpy of total HAP). Owners/operators of facilities with existing 4SRB engines may reduce total potential emissions at the facility and qualify as a “synthetic minor source” at any time before June 15, 2007, so that the existing 4SRB engines will not be subject to subpart ZZZZ. Owners/operators of facilities with new or reconstructed engines may reduce total potential emissions at the facility and qualify as a “synthetic minor source” up until August 16, 2004 or the startup date of the new or reconstructed engines, whichever is later, so that the new or reconstructed engines will not be subject to subpart ZZZZ.

### **Question 3. Identification of Relevant Source Categories (40 CFR §63.9(b)(2)(iii))**

Complete the table for each stationary RICE required to submit an initial notification. The following definitions are provided to assist with in completing question 3.

#### Existing/New/Reconstructed

You are considered an **existing stationary RICE** if you commenced construction before December 19, 2002.

You are considered a **new or reconstructed stationary RICE** if you commenced construction or reconstruction on or after December 19, 2002.

You are considered a **reconstructed stationary RICE** if modifications meet the definition or reconstruction as follows:

Reconstruction, unless otherwise defined in a relevant standard, means the replacement of components of an affected or a previously nonaffected source to such an extent that:

- (1) The fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable new source; and
- (2) It is technologically and economically feasible for the reconstructed source to meet the relevant standard(s) established by the Administrator (or a State) pursuant to section 112 of the Act. Upon reconstruction, an affected source, or a stationary source that becomes an affected source, is subject to relevant standards for new sources, including compliance dates, irrespective of any change in emissions of hazardous air pollutants from that source.

#### Subcategories [§63.6675]

Choose one of the following engine subcategories:

1. **Emergency Stationary RICE:** An emergency stationary RICE is any stationary RICE that operates in an emergency situation. Emergency situations include the production of power for critical networks or equipment when electric power from the local utility is interrupted, as well as pumping water in the case of fire or flood [§63.6675]. Stationary RICE that operate in an

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<sup>9</sup> Memorandum from Seitz, J.S., U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, to U.S. Environmental Protection Agency Regional Air Compliance Branch Chiefs. May 16, 1995. Potential to Emit for MACT Standards -- Guidance on Timing Issues.

emergency situation are considered emergency stationary RICE, provided the following criteria are met:

- emergency stationary RICE may be operated to perform maintenance checks and readiness testing, provided these tests are recommended by the manufacturer, vendor or insurance company associated with the engine.
- there is no limit on the use of an emergency stationary RICE in emergency situations and for routine testing and maintenance, but testing should be minimized.
- emergency stationary RICE may be operated in non-emergency situations no more than 50 hours per year.

*You only have to submit an initial notification for new or reconstructed emergency stationary RICE; existing emergency stationary RICE do not have to submit this form and are not subject to any requirements under subpart ZZZZ*

2. **Limited Use Stationary RICE:** A limited use stationary RICE is any stationary RICE that operates less than 100 hours per year.

*You only have to submit an initial notification for new or reconstructed emergency stationary RICE; existing emergency stationary RICE do not have to submit this form and are not subject to requirements under subpart ZZZZ.*

3. **Stationary RICE that combust landfill gas or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis.** Landfill gas is the gaseous by-product of the land application of municipal refuse typically formed through the anaerobic decomposition of waste materials and is composed primarily of methane and CO<sub>2</sub>. Digester gas is the gaseous by-product of wastewater treatment typically formed through the anaerobic decomposition of organic waste materials and is composed primarily of methane and CO<sub>2</sub>.

*You have to submit an initial notification for new or reconstructed stationary RICE that meet these criteria. You also have monitoring, recordkeeping, and reporting requirements related to your annual fuel usage. Existing stationary RICE do not have to submit this form and are not subject to requirements under subpart ZZZZ.*

4. **Spark ignition 4-stroke rich burn (4SRB) stationary RICE:** A stationary RICE is a spark ignition engine when the compressed air/fuel mixture of the engine is ignited by a timed electric spark generated by a spark plug. The engine is a spark ignition four-stroke stationary RICE if the power cycle is completed in two crankshaft revolutions, with intake and compression strokes in the first revolution and power and exhaust strokes in the second revolution. The engine is a rich burn stationary RICE if it is a 4-stroke engine where the manufacturer's recommended operating air/fuel ratio divided by the stoichiometric air/fuel ratio at full load conditions is less than or equal to 1.1. If the engine was originally manufactured as a rich burn engine, but was modified before December 19, 2002 with passive emission control technology for nitrogen oxides (NO<sub>x</sub>) (such as pre-combustion chambers) it is considered a lean burn engine. Also, if existing engines (engines where construction was commenced before December 19, 2002) have no manufacturer's recommendations for air/fuel ratio, they are considered rich burn engines if the excess oxygen content of the exhaust at full load conditions is less than or equal to 2 percent.

*You have to submit an initial notification for existing, new, or reconstructed stationary RICE that meet these criteria. You also have to meet all MACT requirements under subpart ZZZZ.*

5. **Spark ignition 2-stroke lean burn (2SLB) stationary RICE:** An engine is a spark ignition engine when the compressed air/fuel mixture of the engine is ignited by a timed electric spark generated by a spark plug. A 2-stroke engine is an engine that completes the power cycle in a single crankshaft revolution. All spark ignition 2-stroke engines are considered 2SLB under the subpart ZZZZ.

*You have to submit an initial notification for new or reconstructed stationary RICE that meet these criteria. You also have to meet all MACT requirements under subpart ZZZZ. Existing stationary RICE do not have to submit this form and are not subject to requirements under subpart ZZZZ.*

6. **4-stroke lean burn (4SLB) stationary RICE:** An engine is a spark ignition engine when the compressed air/fuel mixture of the engine is ignited by a timed electric spark generated by a spark plug. The engine is 4-stroke engine if it completes the power cycle in two crankshaft revolutions, with intake and compression strokes in the first revolution and power and exhaust strokes in the second revolution. The engine is a 4SLB stationary RICE if it is a 4-stroke engine and is not a rich burn engine.

*You have to submit an initial notification for new or reconstructed stationary RICE that meet these criteria. You also have to meet all MACT requirements under subpart ZZZZ. Existing stationary RICE do not have to submit this form and are not subject to requirements under subpart ZZZZ.*

7. **Compression ignition (CI) stationary RICE:** The engine is a CI engine if a high boiling point liquid fuel injected into the combustion chamber of the engine ignites when the air charge has been compressed to a temperature sufficiently high for auto-ignition. Compression engines include diesel engines, dual-fuel engines (engines where liquid fuel, usually diesel fuel, is used for compression ignition and a gaseous fuel, usually natural gas, is used as the primary fuel), and engines that are not spark ignition engines.

*You have to submit an initial notification for new or reconstructed stationary RICE that meet these criteria. You also have to meet all MACT requirements under subpart ZZZZ. Existing stationary RICE do not have to submit this form and are not subject to requirements under subpart ZZZZ.*

#### **Question 4. Description of the Major Source, Identification of Emission Points and HAP Emitted (40 CFR §63.9(b)(2)(iv))**

The intent of this question is to give the States an idea of the HAPs emitted under subpart ZZZZ.

Primary HAP emitted from this stationary RICE are typically formaldehyde, acrolein, methanol, and acetaldehyde.

## **Question 5. Signature**

This section must be signed by an authorized representative of the member company that is responsible for the overall operation of the facility. 40 CFR 70.2 defines a responsible official as the President, Secretary, Treasurer, or Vice President of the company or the affected sources designated representative under title V or part 70 activities.

## **MAILING ADDRESSES**

Please mail the completed form to both your State Air Pollution Control Office and your EPA Regional Office (see addresses provided below):

**EPA Region I** (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont), Air Compliance Clerk, 1 Congress Street, Suite 1100, Boston, MA 02114-2023.

**EPA Region II** (New Jersey, New York, Puerto Rico, Virgin Islands), Air Compliance Branch Chief, 290 Broadway, New York, NY 10007-1866.

**EPA Region III** (Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia), Director, Air Protection Division, 1650 Arch Street, Philadelphia, PA 19103-2029.

**EPA Region IV** (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee), Director, Air, Pesticides and Toxics Management Division, Atlanta Federal Center, 61 Forsyth Street, SW, Atlanta, GA 30303-3104.

**EPA Region V** (Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin), Director, Air and Radiation Division, 77 West Jackson Blvd., Chicago, IL 60604-3507.

**EPA Region VI** (Arkansas, Louisiana, New Mexico, Oklahoma, Texas), Air Permits Section, Fountain Place 12<sup>th</sup> Floor, Suite 1200, 1445 Ross Avenue, Dallas, TX 75202-2733.

**EPA Region VII** (Iowa, Kansas, Missouri, Nebraska), Director, Air, RCRA and Toxics Division, 901 North 5<sup>th</sup> Street, Kansas City, KS 66101.

**EPA Region VIII** (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming), Air and Toxics, 999 18th Street, Suite 500, Denver, CO 80202-2466.

**EPA Region IX** (Arizona, California, Hawaii, Nevada, American Samoa, Guam), Air Division, 75 Hawthorne Street, San Francisco, CA 94105.

**EPA Region X** (Alaska, Idaho, Oregon, Washington), Director, Office of Air Quality, 1200 Sixth Avenue, Seattle, WA 98101.